B

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R6-ES-2019-0054; FF09E21000 FXES1111090FEDR 234]

RIN 1018–BE23

Endangered and Threatened Wildlife and Plants; Threatened Species Status with Section 4(d) Rule for Whitebark Pine (*Pinus albicaulis*)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine that whitebark pine (*Pinus albicaulis*), a high-elevation tree species found across western North America, is a threatened species under the Endangered Species Act of 1973 (Act), as amended. We also finalize a rule under the authority of section 4(d) of the Act that provides measures that are necessary and advisable to provide for the conservation of the species. We have determined that designation of critical habitat for the whitebark pine is not prudent at this time.

DATES: This rule is effective January 17, 2023.

ADDRESSES: This final rule is available on the internet at *https://www.regulations.gov* under Docket No. FWS-R6-ES-2019-0054. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at *https://www.regulations.gov* under Docket No. FWS-R6-ES-2019-0054.

FOR FURTHER INFORMATION CONTACT: Tyler Abbott, Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Ecological Services Field Office, 334 Parsley Boulevard, Cheyenne, WY 82007; telephone: 307–757–3707. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711

(TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become endangered within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that whitebark pine meets the definition of a threatened species; therefore, we are listing it as such. We have determined that designating critical habitat is not prudent. Both listing a species as an endangered or threatened species and designating critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process.

What this document does. This rule lists whitebark pine (*Pinus albicaulis*) as a threatened species under the Act. This document also finalizes a rule under the authority of section 4(d) of the Act that provides measures that are necessary and advisable to provide for the conservation of whitebark pine.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that

the primary stressor driving the status of the whitebark pine is white pine blister rust, a fungal disease caused by the nonnative pathogen *Cronartium ribicola* (Factor C). Whitebark pine is also negatively affected by the mountain pine beetle (*Dendroctonus ponderosae* Hopkins) (Factor C), altered fire regimes (Factor E), and the effects of climate change (Factor E).

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. We have determined that designating critical habitat is not prudent for whitebark pine at this time, for the reasons discussed below in **Critical Habitat**.

Previous Federal Actions

Please refer to the proposed rule to list whitebark pine as a threatened species (85 FR 77408; December 2, 2020) for a detailed description of previous Federal actions concerning this species.

Supporting Documents

We prepared an SSA report for whitebark pine in 2018 (Service 2018, entire) and developed a revised version (version 1.3) in 2021 (Service 2021, entire); this revised version includes updates based on new science and information provided during the public comment period on our proposed listing rule. The SSA team was composed of Service biologists; we also consulted with other species experts in the development of the SSA report. The SSA report compiles the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both detrimental and beneficial) affecting the species. In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought peer review of the SSA report from independent scientists with expertise in whitebark pine biology, habitat management,

genetics, and stressors (factors negatively affecting the species). Their comments were incorporated into the SSA report, as appropriate, during the proposed rule stage and informed our final determination. We also considered all comments and information we received from the public during the comment period for the proposed rule. The SSA report and other materials relating to this rule can be found at *https://ecos.fws.gov/ecp/species/1748* and at *https://www.regulations.gov* under Docket No. FWS-R6-ES-2019-0054.

Summary of Changes from the Proposed Rule

In preparing this final rule, we reviewed and fully considered comments from the public on the proposed rule. In addition to minor editorial changes, we updated information in this final rule and the SSA report (Service 2021, entire) based on comments and additional information provided, as follows:

First, we incorporated information on acres burned in the United States between 2016 and 2019, as these data are now available in the Monitoring Trends in Burn Severity database (MTBS Data Access 2021). Data from these more recent fire seasons do not change our conclusions regarding the species' viability, as white pine blister rust remains the primary driver of the species' status; in fact, these additional data validate our model assumptions that the intensity and extent of fire will increase in the future.

Second, we incorporated, in both the SSA report and in our discussion of fire in this final rule, new information on whitebark pine's susceptibility to damage from low-intensity fire, the role of low-severity fire in whitebark pine ecology, and the role of prescribed fire in maintaining and restoring whitebark pine (see Service 2021, pp. 34–41, 113). Although this information is important and relevant to the management and recovery of whitebark pine, it does not significantly affect our understanding of the threats to the species or our listing determination. The loss of whitebark pine to low-

intensity fire would primarily affect individuals at the stand scale and is unlikely to affect the species' broader distribution and viability (Service 2021, p. 41).

Third, we revised our discussion of the stressor of altered fire regimes in the SSA report and in this rule to better capture the subtleties in recent research regarding the role of fire suppression in whitebark pine ecosystems (Service 2021, pp. 37–39). The idea that fire suppression has resulted in tree densification and loss of whitebark pine has been a predominant hypothesis in the whitebark pine literature (Arno 1980, p. 460; Arno 2001, p. 82; Keane et al. 2017a, p. 3; Keane and Parsons 2010, p. 57; Flanagan et al. 1998, p. 307); however, other recent research has challenged these findings (Service 2021, pp. 37–39). Whitebark pine may be more shade-tolerant and resilient to suppression than previously determined (Larson and Kipfmueller 2012, p. 204; Campbell and Antos 2003, p. 395; Dolanc et al. 2013, p. 272; Larson et al. 2009, p. 294). Thus, although fire suppression undoubtedly affects individual whitebark pine stands, it is unclear under what conditions fire suppression begins to negatively influence whitebark pine populations and the rate at which succession occurs in those populations. However, when considering the stressor of fire at the rangewide scale of whitebark pine, these additional nuances on the past effects of fire suppression do not change our original conclusions that high-severity fire currently influences whitebark pine and is expected to influence the species in the future.

Fourth, we added recent research to the SSA report regarding the characteristics of whitebark pine trees that are more resistant to mountain pine beetle attacks (Service 2021, pp. 53–54). These trees exhibited slower growth rates and greater genetic diversity (Kichas et al. 2020, p. 6; Six et al. 2021, p. 19; Six et al. 2021, p. 9). There is also recent evidence of a genetic basis for resistance to mountain pine beetle attack, with mountain pine beetles selecting some whitebark pine genotypes for attack over other genotypes, even during outbreaks (Six et al. 2018, p. 7). This research also shows that, although tree

vigor is often used as an indicator of resistance to bark beetles in some conifer species, it does not appear to be an indicator of resistance to mountain pine beetle in whitebark pine, illustrating that thinning treatments may not enhance whitebark pine's defenses to bark beetles (Six et al. 2021, p. 19). Although this information is important and relevant to the management and recovery of whitebark pine, it does not significantly affect our understanding of the threats to the species or species' status.

Fifth, in the SSA report, we added information on the uncertainties regarding how climate change could affect Clark's nutcracker (*Nucifraga columbiana*) populations (Service 2021, p. 60). Should climate change negatively affect Clark's nutcracker populations under future warming scenarios, the additive effect would likely exacerbate the decline of whitebark pine in the future by disrupting the mutualistic relationship between the two species (Ray et al. 2020, p. 20); however, uncertainties remain as to how Clark's nutcracker could respond to climatic changes. This information only further supports our conclusion that whitebark pine is likely to become an endangered species in the foreseeable future.

Sixth, we revised language in appendix A of the SSA report, which discusses management and restoration, based on information from the comments we received on the proposed rule. This new language further acknowledges existing local conservation efforts and better reflects potential restoration strategies (Service 2021, pp. 119–144). We also include additional discussion of localized conservation efforts in this final rule.

Seventh, we made additional minor updates to the SSA report and, where appropriate, to this final rule, based on information provided in the comments, including, but not limited to, adding relevant literature references throughout, updating language regarding the species' shade tolerance (Service 2021, p. 22), detailing additional uncertainties surrounding Clark's nutcracker cache-site selection (Service 2021, p. 25), updating language in the SSA report's appendix A regarding the uncertainties inherent in

identifying effective restoration strategies for the species (Service 2021, pp. 125–131), and updating language regarding whitebark pine seed-germination requirements (Service 2021, p. 25). In all, these minor updates to the SSA report do not change our overall understanding of the species' viability.

Eighth, we updated analysis and language in our determination of whitebark pine status throughout a significant portion of the range to ensure consistency with current practice and to enhance legal completeness.

Finally, we made the following changes to the discussion and/or regulatory text of the 4(d) rule:

- Based on a comment we received from the Confederated Salish and Kootenai Tribes, we added an exception to the 4(d) rule for this species to allow members of federally recognized Tribes to collect whitebark pine seeds for Tribal ceremonial use or traditional consumption. As we discuss in additional detail in **Provisions of the Final 4(d) Rule**, below, this minimal level of collection does not present a threat to the species and will ensure Tribes can continue to use these culturally significant seeds in their traditional practices.

- In our discussion of the 4(d) rule below, we clarify that the exception for "forest-management activities" includes vegetation management in existing utility rights-of-way, as this management does not present a threat to the species and could help reduce the risk of high-severity fire, and we add clarifying language regarding the relationship between the 4(d) rule for whitebark pine and section 7 consultation.

- We made editorial corrections to the wording of certain prohibitions and exceptions in the regulatory text of the 4(d) rule to increase clarity and to better align the language with existing regulations and law; these editorial corrections do not alter the original meaning of these prohibitions and exceptions.

I. Final Listing Determination

Background

A thorough review of the taxonomy, range and distribution, life history, and ecology of whitebark pine is presented in the SSA report (Service 2021, pp. 14–32; available at *https://www.regulations.gov* at Docket No. FWS-R6-ES-2019-0054) and is briefly summarized here. Whitebark pine is a slow-growing, long-lived, five-needle conifer, occurring at high elevations across the western United States and Canada. Whitebark pine has a broad range both latitudinally (occurring from a southern extent of approximately 36° north in California to 55° north latitude in British Columbia, Canada) and longitudinally (occurring from approximately 128° west in British Columbia, Canada, to an eastern extent of 108° west in Wyoming). Rangewide, whitebark pine occurs on an estimated 32,616,422 hectares (ha) (80,596,935 acres (ac)) in western North America.

Whitebark pine typically occurs on cold and windy high-elevation sites in western North America, although it also occurs in scattered areas of the warm and dry Great Basin (Service 2021, p. 14). Whitebark pine is considered both a keystone and a foundation species in western North America, where it increases biodiversity and contributes to critical ecosystem functions (Tomback et al. 2001, pp. 7–8).

Whitebark pine is a hardy conifer that tolerates poor soils, steep slopes, and windy exposures; it is found at alpine tree line and subalpine elevations throughout its range (Tomback et al. 2001, pp. 6, 27). Whitebark pine is slow-growing and moderately shade-tolerant, and can be outcompeted and replaced by more shade-tolerant trees in the absence of disturbances like fire (Arno and Hoff 1989, p. 6). The species grows under a wide range of annual precipitation amounts, from about 51 to over 254 centimeters (cm) (20 to 100 inches (in.)) per year, and it is considered relatively drought-tolerant (Arno and Hoff 1989, p. 7; Farnes 1990, p. 303). A variety of soil types supports whitebark pine

(Weaver 2001, pp. 47–48; Keane et al. 2012, p. 3). These soil types are generally described as well-drained soils that are poorly developed, coarse, rocky, and shallow over bedrock (COSEWIC 2010, p. 10).

Primary seed dispersal occurs almost exclusively by Clark's nutcrackers, a bird in the family Corvidae (whose members include ravens, crows, and jays) (Lanner 1996, p. 7; Schwandt 2006, p. 2). Seed predation plays a major role in whitebark pine population dynamics, as seed predators' actions largely determine the fate of seeds. However, whitebark pine has coevolved with seed predators and has several adaptations, such as masting (regional synchrony of mass production of seeds), that have allowed the species to persist despite heavy seed predation (Lorenz et al. 2008, pp. 3–4). Whitebark pine trees may produce both male and female cones (Service 2021, p. 20). Some whitebark pine individuals are capable of producing limited amounts of seed cones at 20 to 30 years of age, although large cone crops usually are not produced until 60 to 80 years (Krugman and Jenkinson 1974, as cited in McCaughey and Tomback 2001, p. 109), with average earliest first cone production at 40 years (Tomback and Pansing 2018, p. 7). Individual whitebark pine trees can survive on the landscape for hundreds of years (Service 2021, p. 20).

In the literature, there is a range of time periods experts have used to inform whitebark pine generation time; these methods have included average age of first cone production (around 40 years) (Tomback and Pansing 2018, p. 7) and the age trees produce a large cone crop that can attract Clark's nutcrackers (60 to 80 years) (Krugman and Jenkinson 1974, as cited in McCaughey and Tomback 2001, p. 109). Therefore, the full range of possible generation times for whitebark pine is 40 to 80 years. In our SSA, we used 60 years as the average generation time to inform the time intervals for our future condition analysis in the SSA; this is the midpoint of the range of possible generation times in the literature (Service 2021, p. 99).

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for threatened and endangered species. In 2019, jointly with the National Marine Fisheries Service, the Service issued final rules that revised the regulations in 50 CFR part 424 regarding how we add, remove, and reclassify threatened and endangered species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019). At the same time the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (84 FR 44753; August 27, 2019). We collectively refer to these actions as the 2019 regulations.

As with the proposed rule, we are applying the 2019 regulations for this final rule because the 2019 regulations are the governing law just as they were when we completed the proposed rule. Although there was a period in the interim—between July 5, 2022, and September 21, 2022—when the 2019 regulations became vacated and the pre-2019 regulations therefore governed, the 2019 regulations are now in effect and govern listing and critical habitat decisions (see *Center for Biological Diversity v. Haaland*, No. 4:19-cv-05206-JST, Doc. 168 (N.D. Cal. July 5, 2022) (CBD v. Haaland) (vacating the 2019 regulations and thereby reinstating the pre-2019 regulations)); *In re: Cattlemen's Ass'n*, No. 22-70194 (9th Cir. Sept. 21, 2022) (staying the district court's order vacating the 2019 regulations until the district court resolved a pending motion to amend the order); *Center for Biological Diversity v. Haaland*, No. 4:19-cv-5206-JST, Doc. Nos. 197, 198

(N.D. Cal. Nov. 16, 2022) (granting plaintiffs' motion to amend July 5, 2022 order and granting government's motion for remand without vacatur).

The Act defines an "endangered species" as a species that is in danger of extinction throughout all or a significant portion of its range and a "threatened species" as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term "threat" to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term "threat" includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term "threat" may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an "endangered species" or a "threatened species" only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term "foreseeable future," which appears in the statutory definition of "threatened species." Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term "foreseeable future" extends only so far into the future as the Service can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time for which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history

characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Analytical Framework

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent our decision on whether the species should be listed as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report (Service 2021, entire); the full SSA report can be found at Docket No. FWS-R6-ES-2019-0054 on *https://www.regulations.gov* and at *https://ecos.fws.gov/ecp/species/1748*.

To assess whitebark pine viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the stressors that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability. We completed a comprehensive assessment of the biological status of the whitebark pine and prepared a report of the assessment (the SSA report; Service 2021, entire), which provides a thorough account of the species' needs and overall viability. We define viability here as the ability of the species to sustain populations in the wild into the future. In the discussion below, we summarize the conclusions of that assessment, which we provide in full under Docket No. FWS-R6-ES-2019-0054 on *https://www.regulations.gov* and at *https://ecos.fws.gov/ecp/species/1748*.

In the SSA, we discuss individual-, population-, and species-level needs of whitebark pine in detail (Service 2021, pp. 22–32). In general, whitebark pine individuals have similar requirements to other tree species. That is, all four life stages require adequate amounts of sunlight, water, and soil for survival and/or reproduction (Service 2021, pp. 22–28). Clark's nutcrackers are able to assess cone crops, and if there are insufficient seeds to cache, they will emigrate in order to survive (McKinney et al. 2009,

p. 599). Therefore, at the population level, whitebark pine populations need sufficient density and abundance of reproductive individuals to facilitate masting and to attract Clark's nutcrackers, in order to achieve adequate recruitment and maintain resiliency to stochastic events (Service 2021, pp. 27–30). At the species-level, for long-term viability, whitebark pine requires multiple (redundancy), self-sustaining populations (resiliency) distributed across the landscape (representation) to maintain the ecological and genetic diversity of the species (Service 2021, pp. 31–32).

Rangewide data from U.S. Forest Service (USFS) Forest Inventory and Analysis surveys indicate that 51 percent of all standing whitebark pine trees in the United States are now dead, with over half of that mortality occurring approximately in the last two decades alone (Service 2021, p. 86; Goeking and Izlar 2018, p. 7). We focused our analysis of whitebark pine's viability on four main stressors: white pine blister rust, mountain pine beetle, altered fire regimes, and climate change. We focused on these four stressors because, according to the best available data, these stressors are the leading factors attributed to the aforementioned decline of whitebark pine (Keane and Arno 1993, p. 44; Tomback et al. 2001, p. 13; COSEWIC 2010, p. 24; Tomback and Achuff 2010, p. 186; Keane et al. 2012, p. 1; Mahalovich 2013, p. 2; Mahalovich and Stritch, 2013, entire; Smith et al. 2013, p. 90; Greater Yellowstone Whitebark Pine Monitoring Working Group (GYWPMWG) 2016, p. v; Jules et al. 2016, p. 144; Perkins et al. 2016, p. xi; Shanahan et al. 2016, p. 1; Shepherd et al. 2018, p. 138). While all of these stressors affect the species, we found that white pine blister rust is the main driver of the species' current and future conditions. Each of these four stressors is described in detail in our SSA report (Service 2021, pp. 34–63), and is summarized below. There are numerous other factors that operate on whitebark pine at more local scales, affecting individuals or local areas; these include, but are not limited to, agriculture; energy production and mining; biological resource use (e.g., logging); and recreation (Service 2021 pp. 145–

160). However, these factors are likely not driving population dynamics of whitebark pine on a rangewide scale, or at the species level (Service 2021, p. 34).

White Pine Blister Rust

White pine blister rust is a fungal disease of five-needle pines caused by a nonnative pathogen (Geils et al. 2010, p. 153). The fungus was inadvertently introduced to the West Coast around 1910, near Vancouver, British Columbia (McDonald and Hoff 2001, p. 198; Brar et al. 2015, p. 10). The incidence of white pine blister rust at stand, landscape, and regional scales varies due to time since introduction and environmental suitability for its development. It continues to spread into areas originally considered less suitable for infection, such as the Sierra Nevada Mountains, where it has become a serious stressor, causing severe population losses to several species of western pines, including whitebark pine (Schwandt et al. 2010, pp. 226–230). Its current known geographic distribution in western North America includes all U.S. States and British Columbia and Alberta, Canada.

The white pine blister rust fungus has a complex life cycle: It does not spread directly from one tree to another, but alternates between primary hosts (i.e., five-needle pines) and alternate hosts. Alternate hosts in western North America are typically woody shrubs in the genus *Ribes* (gooseberries and currants) (McDonald and Hoff 2001, p. 193; McDonald et al. 2006, p. 73). The spreading of white pine blister rust spores depends on the distribution of hosts, the prevailing microclimates, and the different genotypes of white pine blister rust and hosts (McDonald and Hoff 2001, pp. 193, 202). A wave event (a massive spreading of new white pine blister rust infections into new or relatively unaffected areas, or intensification of spread from a cumulative buildup in already infected stands) occurs where alternate hosts are abundant and when late-summer weather is favorable to spore production and dispersal and subsequent infection of pine needles. Because its abundance is influenced by weather and host populations, white pine

blister rust also is affected by climate change. If conditions become cooler or moister, white pine blister rust will likely spread and intensify; conversely, where conditions become both warmer and drier, it may spread more slowly (Service 2021, p. 45). However, even if climatic conditions slow the spread of white pine blister rust, it remains present on the landscape and will still continue to infect trees, albeit at a slower rate.

White pine blister rust attacks whitebark pine seedlings, saplings, and mature trees, damaging stems and cone-bearing branches and restricting nutrient flows. It eventually girdles branches and boles (tree trunks or stems), leading to the death of branches or the entire tree (Tomback et al. 2001, p. 15; McDonald and Hoff 2001, p. 195). While some infected mature trees can continue to live for decades (Wong and Daniels 2017, p. 1935), their cone-bearing branches typically die first, thereby eliminating the seed source required for reproduction (Geils et al. 2010, p. 156). Although some areas of the species' range have been affected by white pine blister rust for 90 years or more, for whitebark pine that timeframe equates to only 1.5 generations (Mahalovich 2013, p. 17), which means the species has had a limited time to adapt to or develop resistance to white pine blister rust. However, low levels of rust resistance have been documented on the landscape in individual trees and their seeds, indicating that there is some level of heritable resistance to white pine blister rust (Hoff et al. 2001, p. 350; Mahalovich et al. 2006, p. 95; Mahalovich 2015, p. 1). In some populations and geographic areas, there is moderate frequency and level of genetic resistance, while in others, the frequency of resistance appears to be much lower (Sniezko 2018, pp. 1–2).

Most current management and research focus on producing and planting whitebark pine seedlings with proven genetic resistance to white pine blister rust, but also include enhancing natural regeneration and applying silvicultural treatments, such as appropriate site selection and preparation, pruning, and thinning (Zeglen et al. 2010, p. 347). However, management challenges to restoration include remoteness, difficulty of

access, and a perception that some whitebark pine restoration activities conflict with wilderness values (Schwandt et al. 2010, p. 242). In addition, the vast scale at which planting rust-resistant trees would need to occur, the long timeframes in which restoration efficacy could be assessed, and limited funding and resources will make it challenging to restore whitebark pine throughout its range. Based on modeling results (Ettl and Cottone 2004, pp. 36–47; Hatala et al. 2011, entire; Field et al. 2012, p. 180), we conclude that, in addition to the ubiquitous presence of white pine blister rust across the entire range of the whitebark pine, white pine blister rust infection likely will continue to increase and intensify within individual sites, ultimately resulting in stands that are no longer viable and potentially face extirpation. For a more detailed discussion of white pine blister rust, see the SSA report (Service 2021, pp. 41–48).

Mountain Pine Beetle

The native mountain pine beetle is one of the principal sources of whitebark pine mortality (Raffa and Berryman 1987, p. 234; Arno and Hoff 1989, p. 7). Mountain pine beetles feed on whitebark pine and other western conifers and, to reproduce successfully, the beetles must kill host trees (Logan and Powell 2001, p. 162; Logan et al. 2010, p. 895). At endemic, or more typical, levels, mountain pine beetles remove relatively small areas of trees, changing stand structure and species composition in localized areas. However, when conditions are favorable (abundant hosts and favorable climate), mountain pine beetle populations can erupt to epidemic levels and create stand-replacing events that may kill 80 to 95 percent of suitable host trees (Berryman 1986 as cited in Keane et al. 2012, p. 26). Such outbreaks are episodic, and typically subside only when the supply of suitable host trees has been exhausted or when winter temperatures are sufficiently low to kill larvae and adults (Gibson et al. 2008, p. 2). Therefore, at epidemic levels, mountain pine beetle outbreaks may have population-level effects on whitebark pine.

Mountain pine beetle epidemics affecting whitebark pine have occurred throughout recorded history (Keane et al. 2012, p. 26). The most recent epidemic began in the late 1990s, and, although the levels of mortality from this epidemic have since subsided considerably, mountain pine beetles continue to be a measurable source of mortality for whitebark pine (Macfarlane et al. 2013, p. 434; Mahalovich 2013, p. 21; Shelly 2014, pp. 1–2). Unlike previous epidemics, the most recent mountain pine beetle outbreak had a significant rangewide impact on whitebark pine (Logan et al. 2003, p. 130; Logan et al. 2010, p. 898; MacFarlane et al. 2013, p. 434). Warmer, shorter winter seasons caused by climate change have provided favorable conditions necessary to sustain the most recent, unprecedented mountain pine beetle epidemic in high-elevation communities across the western United States and Canada (Logan and Powell 2001, p. 167; Logan et al. 2003, p. 130; Raffa et al. 2008, p. 511). This most recent epidemic is waning across the majority of the West (Hayes 2013, pp. 3, 41, 42, 54; Alberta Whitebark and Limber Pine Recovery Team 2014, p. 18; Bower 2014, p. 2; Shelly 2014, pp. 1–2). However, given ongoing and predicted environmental effects from climate change, we expect mountain pine beetles will continue to expand into higher-elevation habitats and that epidemics will continue within the range of whitebark pine (Buotte et al. 2016, p. 2516; Sidder et al. 2016, p. 9). For a more detailed discussion of mountain pine beetles, see the SSA report (Service 2021, pp. 48–57).

Altered Fire Regimes

Fire is one of the most important landscape-level disturbance processes within high-elevation whitebark pine forests (Agee 1993, p. 259; Morgan and Murray 2001, p. 238; Spurr and Barnes 1980, p. 422) and is relevant to whitebark pine both as a stressor that causes mortality and as a mechanism that affects forest succession (Arno 2001, p. 82; Shoal et al. 2008, p. 20; Keane and Parsons 2010, p. 57). Although whitebark pine is fire-adapted, there is uncertainty surrounding the specifics of these adaptations, including the

species' ability to resist fires of differing intensity, the role of low-severity fire, and how fire suppression interacts with fire-return intervals to affect forest succession across the range of whitebark pine. We discuss the ways in which fire can influence whitebark pine population dynamics in the SSA report, including highlighting these relevant uncertainties (Service 2021, pp. 34–41).

When considering the role of fire in whitebark pine ecosystems, it is critical to consider the potential effects that differing fire intensities have on fire severity and, consequentially, how differing severities may affect the species. Fire intensity describes the energy released from the combustion of organic matter; fire severity describes the effects that the fire's intensity has on the ecosystem (Keeley 2009, pp. 117–118). Fire resistance is the ability of mature trees to withstand surface fire; different tree species have different functional traits that affect their ability to resist surface fires of differing intensities (Stevens et al. 2020, p. 945). Higher-intensity fires often result in higher-severity fire effects, and lower-intensity fires often result in lower-severity fire effects, but the latter is not necessarily always the case. In systems where the vegetation is not well-adapted to resist and survive low-intensity fire, those fires can result in more severe fire effects.

Whitebark pine is well-adapted to mixed- and high-severity fire effects. In many areas, mixed- and high-severity fire have historically been conducive to the maintenance of whitebark pine ecosystems at the landscape scale (Arno et al. 2000, p. 226; Arno 2001, p. 83, Campbell and Antos 2003, p. 393; Larson et al. 2009, p. 283; Romme 1982, p. 208). Fire can expose mineral soils and reduce forest canopy closure, providing optimal growing conditions for whitebark pine seedlings (Tomback et al. 2001, p. 13). Mixed- and high-severity fires also create open areas that whitebark pine may colonize via seed dispersal facilitated by Clark's nutcracker, although this colonization depends on the

availability of nearby seed sources (McCaughey et al. 1985; Tomback et al. 1990, 1993 in Keane and Parsons 2010, p. 58).

Some experts also conclude that low-intensity surface fires that result in low-severity fire effects are an important ecosystem process in some whitebark pine systems, because low-severity fire can remove small-diameter trees and seedlings, reduce fuel loads, and allow mature whitebark pine trees to maintain site dominance or co-dominance (Arno 2001, p. 82; Keane and Parsons 2010, p. 57; Flanagan et al. 1998, p. 307). However, whitebark pine's ability to resist and survive low-intensity fire is still somewhat uncertain, as we discuss in additional detail in the SSA report (Service 2021, pp. 36–37; Arno and Hoff 1990 in Keane and Parsons 2010, p. 58; Stevens et al. 2020, p. 948; Hood et al. 2008, p. 66; Keane et al. 2020, p. 7; Keane and Parsons 2010, p. 63). Despite these uncertainties, the loss of whitebark pine to low-intensity fire would primarily affect individuals at the stand scale and is unlikely to affect the species' broader distribution (Service 2021, p. 41).

Despite adaptations that allow whitebark pine to recolonize areas that experience high-severity fire effects, the ability of whitebark pine to regenerate and reestablish following high-severity fire has been disrupted by white pine blister rust in many areas. This stressor makes the species more vulnerable to the impacts of fire (Service 2021, p. 40). White pine blister rust has killed many mature whitebark pine trees, effectively reducing or eliminating whitebark pine seed sources. The presence of white pine blister rust also reduces whitebark pine seedling survival, which significantly reduces the species' ability to regenerate in fire-created openings that are typically ideal for seedling establishment. Thus, although high-severity fires may create these ideal openings for seed caching, facilitate seedling establishment, and reduce competitive pressures, we view the immediate large-scale loss of mature whitebark pine trees, the corresponding loss of seed

sources, and potential reduction of genetic diversity as the predominant effects of high-severity fire.

In summary, fire has been an important ecosystem process in maintaining whitebark pine on the landscape throughout the species' evolutionary history. However, these historical dynamics with fire have likely been altered due to the compounding effects of white pine blister rust and mountain pine beetles. Also, in general, fire characteristics are expected to shift with future climate changes. Substantial increases in fire-season length, number of fires, area burned, and intensity are predicted (e.g., Keane et al. 2017b, pp. 34–35; Westerling 2016, pp. 1–2). Thus, although there is variation in the degree to which specific stands have been affected, over the range of whitebark pine, the widespread incidence of poor stand health and reduced reproductive capacity from disease and predation, coupled with changes in fire regimes due to climate change, has compromised and will continue to compromise regeneration of whitebark pine in many cases (Tomback et al. 2008, p. 20; Leirfallom et al. 2015, p. 1601). These factors increase the likelihood of negative effects to whitebark pine populations from fire, especially from high-severity fires that can cause widespread tree mortality. For a more detailed discussion of altered fire regimes, see the SSA report (Service 2021, pp. 34–41).

Climate Change

Our analyses under the Act include consideration of ongoing and projected changes in climate. In general, the pace of predicted climate change will likely outpace many plant species' abilities to respond to the concomitant habitat changes. Whitebark pine is potentially particularly vulnerable to warming temperatures because it is adapted to cool, high-elevation habitats. Therefore, current and anticipated warming is expected to make its current habitat unsuitable for whitebark pine, either directly or indirectly as conditions become more favorable to whitebark pine competitors, such as subalpine fir (*Abies lasiocarpa*) or mountain hemlock (*Tsuga mertensiana*) (Bartlein et al. 1997, p.

788; Hamann and Wang 2006, p. 2783; Hansen and Phillips 2015, p. 74; Schrag et al. 2007, p. 8; Warwell et al. 2007, p. 2; Aitken et al. 2008, p. 103; Loehman et al. 2011, pp. 185–187; Rice et al. 2012, p. 31; Chang et al. 2014, p. 10). The rate of migration needed to respond to predicted climate change will be substantial (Malcolm et al. 2002, pp. 844–845; McKenney et al. 2007, p. 941). The ability of whitebark pine to migrate to more favorable areas at a pace sufficient to survive the projected effects of climate change is unknown. We also do not know the degree to which the Clark's nutcracker could facilitate this migration. In addition, the presence of significant white pine blister rust infection in the northern range of whitebark pine could serve as a barrier to effective northward migration. Whitebark pine currently inhabits high elevations, so there is little remaining habitat in many areas for the species to migrate to higher elevations in response to warmer temperatures. Adaptation in response to a rapidly warming climate would also be unlikely, as whitebark pine is a long-lived species with a long generation time (Bradshaw and McNeilly 1991, p. 10).

Climate models indicate that climate change is expected to act directly and indirectly, regardless of the emission scenario, to significantly decrease the probability of rangewide persistence in whitebark pine within the next 100 years (e.g., Warwell et al. 2007, p. 2; Hamann and Wang 2006, p. 2783; Schrag et al. 2007, p. 6; Rice et al. 2012, p. 31; Loehman et al. 2011, pp. 185–187; Chang et al. 2014, p. 10–12). This time interval is less than two generations for this long-lived species. See **Determination of Whitebark Pine Status**, below, for a discussion of the relationship between this modeled timeframe and our identification of the foreseeable future for this listing determination. In addition, projected climate-change effects are a significant stressor to whitebark pine because the impacts of climate change, including projected temperature and precipitation changes, interact with and exacerbate the other stressors, such as mountain pine beetle and altered fire regimes, resulting in habitat loss and population decline. For a more detailed

discussion of climate change impacts on whitebark pine, see the SSA report (Service 2021, pp. 57–63).

Current Conditions

In order to assess the current condition of the whitebark pine across its extensive range, we broke the range into 15 smaller analysis units (AUs), based primarily on Environmental Protection Agency Level III ecoregions as well as input from whitebark pine experts, as described in the SSA report (see Table 1 below; Service 2021, pp. 65–67). Ecoregions identify areas of general similarity in ecosystems, as well as topographic and environmental variables. We further divided AUs in the United States from those in Canada to reflect differences in management and legal status. A map of these AUs is available in the SSA report (Service 2021, p. 66, figure 9), and we detail the area of each AU in Table 1 below. We then evaluated the best available data regarding the current impacts of fire, white pine blister rust, and mountain pine beetle on the resiliency (ability to withstand stochastic events) of each AU. These analyses are described in detail in the SSA report (Service 2021, pp. 68–83), and our conclusions are summarized below. We note that not all AUs are equal in size; they encompass varying proportions of the species' range, ranging from the Middle Rockies AU (27.6 percent of the range) to the Olympics AU (0.4 percent of the range) (Service 2021, p. 67, table 3).

TABLE 1.—Whitebark pine analysis units (AUs).

AU	Area of whitebark pine range within each AU	Percent of total whitebark pine range within each AU
Middle Rockies	9,008,418 ha (22,260,286 ac)	27.6 percent
Idaho Batholith	4,621,881 ha (11,420,917 ac)	14.2 percent
Canadian Rockies	3,660,161 ha (9,044,455 ac)	11.2 percent
Cascades	2,906,758 ha (7,182,755 ac)	8.9 percent
Columbia Mountains	2,849,789 ha (7,041,982 ac)	8.7 percent
U.S. Canadian Rockies	2,153,185 ha (5,320,636 ac)	6.6 percent
Fraser Plateau	2,122,498 ha (5,244,807 ac)	6.5 percent
Northern Rockies	1,704,834 ha (4,212,737 ac)	5.2 percent
Sierras	1,292,333 ha (3,193,424 ac)	4.0 percent
Basin and Range	827,089 ha (2,043,781 ac)	2.5 percent
Blue Mountains	554,865 ha (1,371,101 ac)	1.7 percent

Klamath Mountains	334,950 ha (827,679 ac)	1.0 percent
Nechako Plateau	266,078 ha (657,493 ac)	0.8 percent
Thompson Plateau	194,264 ha (480,037 ac)	0.6 percent
Olympics	119,319 ha (294,844 ac)	0.4 percent
TOTAL SIZE OF WHITEBARK RANGE	32,616,422 ha (80,596,935 ac)	

Resiliency

To assess the current impact of white pine blister rust on the resiliency of whitebark pine AUs, we examined the large volume of published literature and information provided by experts, as described in the SSA report (Service 2021, pp. 72–79). White pine blister rust infections have increased in intensity over time and are now prevalent even in trees living in cold, dry areas formerly considered less susceptible (Tomback and Resler 2007, p. 399; Smith-Mckenna et al. 2013, p. 224), such as the Greater Yellowstone Ecosystem. This trend has resulted in reduced seed production and increased mortality. We assessed the current impact of white pine blister rust on whitebark pine by evaluating data from a modeled dataset developed by the USFS in 2011 for the United States. This modeled dataset is based on white pine blister rust infection information from the USFS Whitebark and Limber Pine Information System (WLIS) database combined with environmental variables (Service 2021, pp. 76–77). Canadian white pine blister rust data were derived from a combination of survey data from Parks Canada and empirical literature (e.g., COSEWIC 2010, p. viii and table 4, p. 19; Smith et al. 2010, p. 67; Smith et al. 2013, p. 90; Shepherd et al. 2018, p. 6). Approximately 34 percent of the range is infected with white pine blister rust (Service 2021, p. 77), and every AU is currently affected by the disease. The current average white pine blister rust infection level within each AU ranges between 2 percent and 74 percent, with 12 of the 15 AUs having an average infection level over 20 percent, and 5 of the AUs having average infection levels above 40 percent (Service 2021, pp. 78–79). Average infection levels are lowest in the southern AUs (Klamath Mountains, Basin and

Range, and Sierras) and sharply increase moving north into the latitudes of the Rocky Mountains and Cascades. As stated above, once white pine blister rust is present in an area, there are no known methods to eradicate it. It will spread and infect more of the area when conditions are favorable.

To assess the current impact of mountain pine beetle on the resiliency of whitebark pine AUs, we aggregated aerial detection survey (a USFS dataset) data for the United States and aerial overview survey (a dataset of the British Columbia Ministry of Forests) data for Canada from 1991 through 2016 across the range of whitebark pine (Service 2021, pp. 80–83). As mountain pine beetles only attack mature trees, the effects of mountain pine beetle attacks observed during aerial surveys can be interpreted as the loss of seed-producing trees. From 1991 through 2016, 5,919,276 ha (14,626,850 ac) of the whitebark pine's range have been affected by the mountain pine beetle, resulting in at least 18 percent of the whitebark pine's range being negatively affected (Service 2021, pp. 80–83). Similar to white pine blister rust infection, the southern AUs are currently less affected by the mountain pine beetle than their more northern counterparts.

To assess the current impact of fire on the resiliency of whitebark pine AUs, we examined burn data collected from 1984 to 2016 from the following sources: Monitoring Trends in Burn Severity (a multi-agency program compiling fire data from multiple sources including the U.S. Geological Survey and the USFS); GeoMac (a multi-agency program providing fire data from multiple agencies managed by the U.S. Geological Survey); and the Canadian Forest Service (Service 2021, p. 68). We found that from 1984 to 2016, between 0.08 percent and 42.64 percent of each AU burned (including fires of any severity level). Although we collected information on all fires, our analysis focuses on areas affected by high-severity fire that could potentially negatively affect the species. Overall, a minimum of 1,273,583 ha (3,147,092 ac) of whitebark pine habitat burned in high-severity fires during this time period, equating to approximately 5 percent of the

species' range within the United States (Service 2021, pp. 69–71). Between 2016 and 2019, an additional 0.8 percent of whitebark pine range within the United States (or 191,459 ha (471,105 ac)) burned at high severity (Service 2021, p. 69). Similar data for high-severity fires were not available for AUs in Canada.

White pine blister rust, mountain pine beetle, and high-severity fires all act on portions of whitebark pine's range, killing individuals and limiting reproduction and regeneration (Service 2021, p. 89, figure 14). Overall, whitebark pine stands have seen severe reductions in reproduction and regeneration because of these stressors, resulting in a reduction in resiliency or their ability to withstand stochastic events. Interactions between these factors have further exacerbated the species' decline and have reduced its resiliency.

Representation

Having evaluated the current impact of the above stressors on the resiliency of each whitebark pine AU, we next evaluated the species' current levels of representation, or ability to adapt to changing conditions (Service 2021, pp. 83–86). The range of variation found within a species, which may include ecological, genetic, morphological, and phenological diversity, may be an indication of its levels of representation. Whitebark pine can be found in a number of ecological settings throughout its range, mainly depending on elevation, latitude, and climate of an area. Whitebark pine has high genetic diversity relative to other conifer tree species (i.e., high representation in terms of genetic variation), with poor genetic differentiation among zones, and similar levels of diversity to other widely distributed tree species in North America (Mahalovich and Hipkins 2011, p. 126). The high levels of genetic diversity within the species may be affected through bottleneck events caused by mortality resulting from white pine blister rust, mountain pine beetle, or high-severity fires. Whitebark pine also has higher rates of inbreeding than most other wind-pollinated species, likely due to Clark's nutcracker

dispersal; Clark's nutcracker can deposit clumps of related seeds in the same vicinity, which leads to close proximity of related mature trees (Keane et al. 2012, p. 14; Service 2021, p. 85). Whitebark pine exhibits a range of morphologies, from tall, single-stemmed trees to shrub-like krummholz forms. These factors may contribute to the species' level of ability to adapt to changing conditions. Given the species' wide geographic range and levels of ecological, genetic, morphological, and phenological diversity, it likely has inherently higher levels of representation than many species.

Redundancy

Finally, we evaluated the whitebark pine's current levels of redundancy, or ability to withstand catastrophic events. Whitebark pine is widely distributed, and thus inherently has higher levels of redundancy than many species. Rangewide, whitebark pine occurs on an estimated 32,616,422 ha (80,596,935 ac) in western North America. However, as a result of the rangewide reduction in resiliency due to the stressors discussed above, there has been a concomitant loss in species redundancy, as many areas become less able to contribute to the species' ability to withstand catastrophic events (Service 2021, p. 86).

Overall, as previously mentioned, rangewide data from USFS Forest Inventory and Analysis surveys indicate that 51 percent of all standing whitebark pine trees in the United States are now dead, with over half of this mortality occurring approximately in the last two decades alone (Goeking and Izlar 2018, p. 7). Each of the stressors acts individually and cumulatively on portions of the whitebark pine's range, and interactions between stressors have further exacerbated the species' decline and have reduced its resiliency. This reduction in resiliency is rangewide, occurring across all AUs, with the Canadian Rockies AU, U.S. Canadian Rockies AU, and Northern Rockies AU likely the most affected. While the species is still wide-ranging and, therefore, has inherently higher levels of representation and redundancy than many species, reductions to resiliency

across the range are reducing the species' adaptive capacity and ability to withstand catastrophic events (Service 2021, pp. 86–88).

Future Conditions

To assess the future condition of whitebark pine, we projected the impacts of each of the stressors described above under three plausible scenarios (scenarios 1, 2, and 3, as noted below). This analysis, and the uncertainties and assumptions associated with it, are described in more detail in the SSA report (Service 2021, pp. 90–117), and are summarized below. Scenarios constructed include variation in:

(1) The presence of white pine blister rust. Given historical trends, we assume in all scenarios that white pine blister rust will continue to spread and intensify throughout the range of whitebark pine. There is no information to indicate that the rate of spread or prevalence of white pine blister rust will decrease in the future. The incidence of white pine blister rust at stand, landscape, and regional scales varies due to time since introduction and environmental suitability for its development. It continues to spread into areas originally considered less suitable for persistence, and it has become a primary threat. In our future scenarios, we varied the future rate of white pine blister rust spread between 1 and 4 percent annually based on values presented in the literature (e.g., Schwandt et al. 2013, entire; Smith et al 2013, entire). The percentage of genetically resistant individuals and the effectiveness and scale of management efforts to collect, propagate, and plant genetically resistant individuals are key areas of uncertainty. Therefore, we varied the level of genetic resistance between a lower value of 10 percent and higher value of 40 percent based on a range of values presented in the literature (e.g., Mahalovich 2013, p. 33). We considered the higher 40 percent value to include both the presence of some level of natural resistance and planting of resistant individuals.

(2) The frequency of high-severity fire. Given current trends and predictions for future changes in the climate, we assume in all scenarios that the frequency of stand-

replacing fires will increase, although the magnitude of that increase is uncertain (Keane et al. 2017b, p. 18; Westerling 2016, entire; Littell et al. 2010, entire). Because of that uncertainty, we chose what are likely conservative values of a 5 or 10 percent increase in severe fire above current annual levels.

(3) The magnitude of future mountain pine beetle impacts. Given warming trends, we assume in all scenarios that mountain pine beetle epidemics will continue to affect whitebark pine in the future. There is no information to indicate that mountain pine beetle epidemics will decrease in magnitude or frequency in the future. In our future scenarios, we predicted a new mountain pine beetle epidemic would occur every 60 years, as that is the minimum time it would likely take for individual trees to achieve stem diameters large enough to facilitate successful mountain pine beetle brood production that is required to reach epidemic levels.

Climate change is understood to affect whitebark pine principally through its effect on the magnitude of the other three key stressors and was, therefore, included in these projections as an indirect impact to whitebark pine resilience by modifying the rate of change in the other stressors (Service 2021, p. 90). Similarly, potential levels of current and future conservation efforts were also included indirectly in these projections by varying the rate of change of those stressors for which conservation could potentially have an effect. Due to the longevity and long generation time of the species, we modeled projections of impacts for several timeframes, going out 180 years, which corresponds to approximately three generations of whitebark pine (Tomback and Pansing 2018, p. 7; COSEWIC 2010, p. v). However, we focused our discussion of viability in the SSA report largely on the 60-year (approximately one generation) timeframe where our confidence is greatest with respect to the range of plausible projected changes to stressors and the species' response. We note that our projections are based on long-term geospatial data sets and a large body of empirical data, and our scenarios encompass the full range

of conditions that could plausibly occur. Below, we briefly summarize each scenario that we considered and the results of our analysis under each scenario.

Scenario 1 is a continuation of current trends, where impacts from high-severity fires and the mountain pine beetle continue at current levels. We predicted a new mountain pine beetle epidemic would occur every 60 years, as that is the minimum time it would likely take for individual trees to achieve stem diameters large enough to facilitate successful mountain pine beetle brood production that is required to reach epidemic levels. In this scenario, white pine blister rust begins at the current estimated proportion of the range infected and spreads at 1 percent per year with an assumed 10 percent level of genetically resistant individuals (Service 2021, p. 97).

In scenario 2, high-severity fires increase by 5 percent over current trends. The spread of white pine blister rust continues at a relatively low annual rate (1 percent per year), and the assumed level of genetic resistance to white pine blister rust is relatively high at 40 percent (a value that includes both the presence of some level of natural resistance and planting of resistant individuals). Mountain pine beetle epidemics continue to occur at 60-year intervals, but 20 percent of affected whitebark pine stands are re-established through conservation efforts, primarily by out-planting nursery-bred seedlings (Service 2021, p. 98).

In scenario 3, high-severity fires increase by 10 percent over current trends. The spread of white pine blister rust increases (4 percent per year), and only 10 percent of individuals on the landscape have genetic resistance to white pine blister rust. Mountain pine beetle epidemics continue to occur at 60-year intervals, but impacts increase in severity by 10 percent, and there is no recruitment between epidemics (Service 2021, p. 98).

Under each scenario, we forecasted the percentage of the whitebark pine's range that each stressor would affect, relative to current levels. We focused our discussion of

viability in the SSA report largely on the 60-year (approximately one generation) timeframe where our confidence is greatest with respect to the range of plausible projected changes to stressors and the species' response. See **Determination of Whitebark Pine Status**, below, for a discussion of the relationship between this modeled timeframe and our identification of the foreseeable future for this listing determination. Currently, white pine blister rust infects approximately 34 percent of whitebark pine's range. Within the 60-year timeframe, under scenario 1, white pine blister rust would infect approximately 61 percent of the range. Under scenario 2, white pine blister rust will infect approximately 52 percent of the range within the next 60 years. Under scenario 3, white pine blister rust will infect approximately 88 percent of the range within the next 60 years (Service 2021, p. 107). Thus, under the three scenarios, within one generation, white pine blister rust will infect 52 to 88 percent of the range. These impacts will reduce the ability of whitebark pine stands to regenerate following disturbances, such as fire and mountain pine beetle outbreaks.

In addition, the mountain pine beetle currently affects approximately 17 percent of the range. Within the 60-year timeframe, under scenario 1, mountain pine beetle will affect an estimated 31 percent of the range in the absence of other stressors. Under scenario 2, mountain pine beetles will affect an estimated 15 percent of the range within 60 years. Under scenario 3, mountain pine beetles will impact approximately 40 percent of the range within 60 years (Service 2021, pp. 109). These potential impacts from mountain pine beetle infestations, especially when combined with the projected reduced stand health from increased white pine blister rust infection, could further reduce species' resiliency in the future.

Within the 60-year timeframe, a continuation of current trends in high-severity fires (under scenario 1) would not likely severely negatively affect whitebark pine resiliency, redundancy, or representation in the absence of other stressors, as newly

burned areas can potentially provide a seedbed for whitebark pine if stands of healthy cone-producing whitebark pine are nearby, resulting in some level of natural regeneration. Similarly, if current trends in high-severity fires continue or increase by 5 to 10 percent (the relatively small projected increase in severe fire under scenarios 2 and 3), high-severity fires alone (in the absence of other stressors) would not be likely to severely negatively affect whitebark pine (Service 2021, pp. 105–106).

In the SSA report, we detail the projected distribution of white pine blister rust, mountain pine beetle, and high-severity fire in each AU under each scenario (Service 2021, pp. 99–110).

Although not specifically analyzed in our projections, the best available science indicates that there are strong synergistic and cumulative interactions between the four key stressors (white pine blister rust, mountain pine beetle, high-severity fire, and climate change), which will increase negative impacts to whitebark pine under all three scenarios. Therefore, our assessment of the future effects of each individual stressor on whitebark pine likely underestimates the total impact of these combined stressors on the species' overall viability. For example, environmental changes resulting from climate change are expected to alter fire regimes, resulting in decreased fire intervals and increased fire severity. More frequent stand-replacing fires will likely negatively affect whitebark pine resiliency by reducing the probability of regeneration in many areas (Tomback et al. 2008, p. 20; Leirfallom et al. 2015, p. 1601). Warming trends have also resulted in unprecedented mountain pine beetle epidemics throughout the range of the whitebark pine (Logan et al. 2003, p. 130; Logan et al. 2010, p. 896). In addition, the latest mountain pine beetle epidemic and white pine blister rust have negatively affected the probability of whitebark pine regeneration because both have resulted in severely decreased seed cone production. These and other interactions are described in the SSA report (Service 2021, pp. 110–116).

In summary, the abundance of whitebark pine is projected to decline over time under all three future scenarios we considered. In these scenarios, the rate of decline appeared to be most sensitive to the rate of white pine blister rust spread, the presence of genetically resistant individuals (whether natural or due to conservation efforts), and the level of regeneration (Service 2021, pp. 116–117). Whitebark pine viability has declined over time, and continuation of current trends and synergistic interactions between fire, white pine blister rust, mountain pine beetle, and climate change will continue to result in actual or functional loss of populations. However, we acknowledge that there may be significant differences and a large degree of variation when examining stressors at smaller landscape or stand scales. As a result of the highly heterogeneous ecological settings of this widespread species (e.g., differences in topography, elevation, weather, and climate) and geographic variation in levels of genetic resistance to white pine blister rust, rates of whitebark pine decline will likely vary for each AU.

We predict all AUs will have a reduced level of resiliency in the future. Continued increases in white pine blister rust infection, synergistic and cumulative interactions between white pine blister rust and other stressors, the resulting loss of seed sources, and subsequently lower regeneration will lead to these reductions in resiliency. Whitebark pine remains widely distributed across the spatial extent and ecological settings of its historical range. However, under all three future scenarios, we predict redundancy and representation will decline, as fewer populations persist and the spatial extent and connectivity of the species declines (Service 2021, p. 118).

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. To assess the current and future condition of

the species, we undertake an iterative analysis that encompasses and incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative-effects analysis.

See the SSA report (Service 2021, entire) for a more detailed discussion of our evaluation of the biological status of the whitebark pine and the influences that may affect its continued existence. Our conclusions in the SSA report, which form the basis for the determination below, are based upon the best available scientific and commercial data.

Conservation Efforts and Regulatory Mechanisms

There are a variety of regulatory mechanisms, as well as management and restoration plans, in place that benefit or affect whitebark pine trees, as described in appendix A of the SSA report (Service 2021, pp. 119–144). Due to the broad distribution of whitebark pine in the United States and Canada, management of this species falls under numerous jurisdictions that encompass a spectrum of local and regional ecological, climatic, and management conditions and needs. Roughly 70 percent of the species' range occurs in the United States, with the remaining 30 percent of its range occurring in British Columbia and Alberta, Canada. In Canada, the majority of the species' distribution occurs on Federal or provincial Crown lands (COSEWIC 2010, p. 12). In the United States, approximately 88 percent of land where the species occurs is federally owned or managed. The majority is located on USFS lands (approximately 74 percent). The bulk of the remaining acreage is located on National Park Service lands (approximately 10 percent). Small amounts of whitebark pine also can be found on Bureau of Land Management lands (approximately 4 percent). The remaining 12 percent

of the species' range is under non-Federal ownership, on State, private, and Tribal lands (Service 2021, pp. 15–16).

Twenty-nine percent of the range of whitebark pine within the United States (Service 2021, p. 16) is designated wilderness under the Wilderness Act of 1964 (Wilderness Act; 16 U.S.C. 1131–1136). The Wilderness Act states that wilderness should be managed to preserve its natural conditions and yet remain untrammeled by humans. This designation limits management options and conservation efforts in those areas to some degree. While the Wilderness Act does not directly allow for treatment of the impacts of white pine blister rust or mountain pine beetle epidemics, it does allow for some "minimal actions" to address management needs. How the Wilderness Act is implemented can vary between agencies, regions, or even between species. For a more detailed discussion of how the Wilderness Act influences the management of whitebark pine, see the SSA report (Service 2021, pp. 134–135).

Several management and restoration plans have been developed for specific regions or jurisdictions to address the task of conserving and restoring this widespread, long-lived species (Service 2021, p. 119). Conversely, some areas within the range of whitebark pine do not have a specific management plan for whitebark pine (e.g., central Idaho) (Service 2021, p. 119). Within the United States, management actions in these areas without a species-specific management plan would generally follow established forest or vegetation-management plans developed under the National Forest Management Act of 1976 (16 U.S.C. 1600(note)), which amended the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1600 et seq.), or other similar policies (e.g., National Forest land management plans, National Park Service vegetation-management plans). Additionally, many organizations, States, agencies, Tribes, and local entities have begun to implement local conservation and restoration programs for

whitebark pine, including conservation on private lands, State Forest Action Plans, and other small-scale restoration projects.

In Canada, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated whitebark pine as "endangered" under the Canadian Species at Risk Act (SARA) on June 20, 2012, due to the high risk of extirpation. This listing provides protection from harming, killing, collecting, buying, selling, or possessing whitebark pine on Federal Crown land.

See the SSA report for a description of management and restoration plans currently in place or under development, and some of their accomplishments (Service 2021, pp. 119–125). While these programs may provide localized benefits to individuals or populations, given whitebark pine's vast geographic range and the ubiquitous presence of white pine blister rust, there is currently no effective means to control the disease and its cumulative impacts with other stressors on a species-wide scale through any regulatory or nonregulatory mechanism.

Summary of Comments and Recommendations

On December 2, 2020, we published a proposed rule in the *Federal Register* (85 FR 77408) to list the whitebark pine as a threatened species and adopt a 4(d) rule for the species, which applies the prohibitions and provisions of section 9(a)(1) of the Act to the species with certain, specific exceptions. We requested that all interested parties submit written comments on the proposed rule by February 1, 2021. We also contacted appropriate Federal and State agencies, scientific experts and organizations, Tribal entities, and other interested parties, and invited them to comment on the proposed rule. On December 9, 2020, we published a notice in USA Today inviting the public to comment. We did not receive any requests for a public hearing. All substantive information provided to us during the comment period is incorporated directly into this final rule, has been used to clarify the information in our SSA report, or is addressed (by

topic) below. We received numerous comments sharing views and strategies on the implementation of recovery efforts for the species; we noted these for our future reference in recovery planning but did not respond to them herein because they are outside the scope of this rulemaking. More generally, we do not summarize or respond to non-substantive comments, comments outside the scope of our rulemaking (e.g., detailing areas for future research), or any comments merely expressing support for our finding.

Peer Review Comments

We reviewed all comments we received from peer reviewers during the proposed rule stage for substantive issues and new information regarding the information contained in the SSA report. The peer and technical reviewers generally concurred with our methods used to determine, and conclusions drawn from the available information regarding, the status and biology of whitebark pine. In some cases, they provided additional information, clarifications, and suggestions to improve the final SSA report. The reviewers also provided new references or corrected existing references we cited in our SSA report; we revised or included relevant references, as appropriate. We summarize the additional substantive feedback we received from peer reviewers below.

Comment 1: One peer reviewer referenced figure 1 in the SSA (Service 2021, p. 17) and asked us to identify the grid cell size.

Our Response: The map in this figure is a vector dataset; therefore, there is no grid cell size. The whitebark pine range dataset was created by compiling various occurrence and distribution data. In order to match the methodology of the Canadian whitebark pine range dataset that was available to us, we used the same methodology in the development of our overall whitebark pine range dataset. This methodology included applying a 6-kilometer (3.7-mile) buffer around all occurrence and distribution data to approximate the range of the species.

Comment 2: A peer reviewer requested that we either clarify or change the name of the AU referred to as the U.S. Canadian Rockies, which includes areas in the United States (south of the U.S./Canada border).

Our Response: The AUs were generally based on Level 3 Ecoregions. Most AU names stem from the names of those ecoregions. The Canadian Rockies ecoregion spans across the U.S./Canada border. We divided this ecoregion into a U.S. portion and a Canadian portion to reflect differences in management and legal status. We named the U.S. portion of this ecoregion the "U.S. Canadian Rockies" to distinguish it from the portion in Canada, which we called the Canadian Rockies.

Comment 3: A peer reviewer presented information and references documenting genetic data to spatially identify populations in the Idaho Batholith, Middle Rockies, and U.S. Canadian Rockies AUs and in a portion of the Northern Rockies AU. They also noted known differences in molecular markers and adaptive variation between the interior and coastal populations of whitebark pine. Despite this information, they indicated that biologically administering populations on a rangewide scale is not appropriate.

Our Response: We recognize that significant genetic work has been completed in the whitebark pine populations in the Idaho Batholith, Middle Rockies, U.S. Canadian Rockies, and Northern Rockies AUs. However, this work does not cover the entire range of the whitebark pine. We lack adequate data on distribution and genetic exchange to precisely map or describe functional populations at a rangewide scale. Instead, for the purposes of analysis, we discuss resiliency of whitebark pine on the basis of AUs (Service 2021, pp. 65–67).

Comment 4: Two peer reviewers questioned our use of 60 years as the generation time of whitebark pine. One peer reviewer recommended that we use another method for calculating generation time but did not provide an associated reference. This peer

reviewer also indicated that many people incorrectly use the age of first reproduction as the generation time. Another provided examples of variation in generation time across the range.

Our Response: We recognize that there are variations and differences in generation time across the range of whitebark pine. In the literature, experts have used a range of time periods to inform whitebark pine generation time; these methods have included average age of first cone production (around 40 years) (Tomback and Pansing 2018, p. 7) and the age trees produce a large cone crop that can attract Clark's nutcrackers (60 to 80 years) (Krugman and Jenkinson 1974, as cited in McCaughey and Tomback 2001, p. 109). Thus, we used 60 years as the average generation time to inform the time intervals of our future condition analysis in the SSA, because this is the lower end of the age range at which the majority of reproductive individuals begin to produce large cone crops and because this is the midpoint of the range of possible generation times in the literature. We did not use average first age of reproduction (i.e., cone production) (around 40 years of age) for our generation time. The average of the ages of reproductive maturity of the two whitebark pine populations one peer reviewer provided (50 and 70 years) results in the generation time we used: 60 years. Our use of 60 years also aligns with the COSEWIC's analysis of generation time using International Union for Conservation of Nature's (IUCN) guidelines (IUCN 2008, pp. 28–31, as cited in COSEWIC 2010, pp. 12–13). COSEWIC used the most appropriate method for plants with seed banks; this method calculates generation time as the juvenile period (age of first reproduction) plus median time to germination. They evaluated the age at which whitebark pine can first begin to produce cones, the age at which whitebark pine trees begin sizable cone production, and the time it takes for a seed in the seed bank to germinate (COSEWIC 2010, pp. 12–13). Their evaluation validated the use of approximately 60 years as the generation time for whitebark pine.

Comment 5: A peer reviewer reported that some data indicate patterns of decrease or periods of no increase in white pine blister rust prevalence. They also mentioned that fire and mountain pine beetles can alter the rate of white pine blister rust infection.

Our Response: We acknowledge there is uncertainty regarding rates of white pine blister rust in the future, and that there is currently, and will continue to be, variation in infection rates across the range of the species; however, the majority of the literature shows white pine blister rust will continue to spread and intensify (Service 2021, pp. 44–45, 48). Additionally, we note that in areas where white pine blister rust has resulted in significant mortality, white pine blister rust could show a decrease in rate of spread because few live trees remain to be hosts.

Comment 6: A peer reviewer questioned why we did not include data from the USFS forest health protection hazard map in our analysis of the current conditions of white pine blister rust.

Our Response: While we examined the USFS's National Insect and Disease Risk and Hazard Mapping (NIDRM) in our analysis of whitebark pine viability, we were unable to include this dataset in our analysis of current conditions (Service 2021, pp. 72–79) because the NIDRM did not analyze the extent of white pine blister rust infection in the United States in the manner we required for our analysis. First, the NIDRM is a modeled dataset that projects levels of potential infection into the future (through the year 2027); it is not intended to characterize observed current levels of infection. Second, to have a consistent metric that allowed for comparison of white pine blister rust infection levels between the United States and Canada and for comparison of the area affected by white pine blister rust with the area affected by other stressors, we needed a measurement of white pine blister rust infection as a proportion of the species' range (e.g., twenty percent of the species' range in a particular AU is infected with white pine blister rust). NIDRM projects white pine blister rust infection in terms of basal area affected (i.e., the

density of trees affected in a given area), rather than the total acres affected; therefore, it did not provide the consistent measure of white pine blister rust infection that we could use to calculate the current proportion of whitebark pine range infected with white pine blister rust. For these reasons, the USFS advised that this dataset could not be accurately applied to our analysis of current or future condition, given our specific needs. Instead, to characterize the current distribution of white pine blister rust infection in the United States, we used a much more informative white pine blister rust estimate modeled dataset developed by the USFS based on survey information from the USFS and the Whitebark and Limber Pine Information System (WLIS) (Service 2021, pp. 76–78).

Comment 7: One peer reviewer questioned the accuracy of our summary of white pine blister rust incidence in the Sierras AU (Service 2021, p. 79, figure 11).

Our Response: We confirmed our incidence rates with the literature the reviewer provided and other literature. While incidence rates may be higher in smaller portions of the AU, the overall incidence rate for the AU is reported accurately in the SSA report.

Comment 8: One peer reviewer indicated that whitebark pine has more adaptive capacity with respect to climate change than we acknowledged in our analysis.

Our Response: Our SSA report already included information explaining that whitebark pine has a comparatively high level of genetic diversity and one of the largest ranges of any of the five-needle white pines in North America. Therefore, we acknowledge in the SSA report that the species should have some adaptability to changing climatic conditions, as this peer reviewer implies (Service 2021, p. 59).

Comment 9: Two peer reviewers expressed uncertainty regarding whether the projected future condition of the species was adequately addressed in our future scenarios. They provided localized examples where parts of our future scenarios may overestimate or underestimate the distribution of stressors.

Our Response: We recognize that our projections of each of the stressors are based on averages of the best available data applied across very large areas of the range (i.e., at the AU scale). We acknowledge that there may be significant differences and a large degree of variation when examining stressors at smaller landscape or stand scales. We also recognize that as a result of the highly heterogeneous ecological settings of this widespread species (e.g., difference in topography, elevation, weather, and climate) and geographic variation in levels of genetic resistance to white pine blister rust, trajectories for rates of whitebark pine decline will likely vary for each AU. There is also inherent uncertainty in any projection of future conditions. In the SSA report, we discuss in detail specific areas of uncertainty that could lead to overestimates (species viability appears better than it actually is) or underestimates (species viability appears worse than it actually is) of viability (Service 2021, pp. 92–95).

However, despite the limitations inherent in our future condition analysis, we have relied on the best available science to examine the status of whitebark pine at a rangewide scale. Our projections are based on long-term geospatial data sets and a large body of empirical data, and our multiple scenarios encompass the full range of conditions that could plausibly occur (Service 2021, pp. 96–98). We also note that our results are generally consistent with other modeling efforts for the species, all of which project continued decline of whitebark pine (e.g., Angeli and McGowan, in prep., entire; Keane et al. 2017b, entire; Hatala et al. 2011, entire; Warwell et al. 2007, entire).

Comment 10: A peer reviewer questioned how we could interpret cause and effect from our future-scenario models when more than one stressor varied in each scenario. They also stated that too many variables varied across the scenarios to produce statistically robust contrasts between scenarios.

Our Response: We used the best available data to account for uncertainty in potential future conditions by covering a breadth of future scenarios that could plausibly

occur within the range of whitebark pine. In our future scenarios, each stressor was modeled separately in a simplified (deterministic) approach in Microsoft Excel (Service 2021, pp. 99–104). We modeled potential future extent of three key stressors; we did not infer any cause or effect because we did not model how the geographic extent of these stressors would translate to changes in the distribution of whitebark pine. Given the detrimental impacts each of these three stressors has on the species, we assumed that a broader distribution of one or more key stressors would result in a decreased distribution of healthy whitebark pine populations (i.e., lower resiliency, redundancy, and representation). In the SSA report, we provide a detailed account of the assumptions and uncertainties involved in this modeling (Service 2021, pp. 92–95).

Comment 11: A peer reviewer questioned why we did not include climate-change projections or models as part of our future scenarios. They also noted that climate change was not modeled over the entire 180-year period. Two peer reviewers indicated that our future projections may not be applicable across all whitebark pine populations within a particular AU given variation in projected climate change; they expressed concern regarding our assumptions that stressors will increase or decrease uniformly across an entire AU in the future. Specifically, these peer reviewers suggested that we should conduct finer-scale analysis of changing climate conditions across the west to better capture population-level variation in how climate and stressors could change throughout the range of the species in the future.

Our Response: Climate change is understood to affect whitebark pine principally through its effect on the magnitude of the other three key stressors and was therefore included in our future projections as an indirect impact to whitebark pine resilience by modifying the rate of change in the other stressors (Service 2021, p. 90). Given that we modeled climate-induced changes in these other stressors 180 years into the future, we examined the indirect effects of climate change over the entire 180-year modeling period.

We also recognize that our projections of each of the stressors are based on averages of the best available data applied across very large areas of the range (i.e., at the AU scale). Given the extensive distribution of whitebark pine, current impacts from stressors and levels of conservation efforts are highly variable across the range. Because of the difficulty identifying an average rangewide magnitude of key stressors, we analyzed current and future conditions of whitebark pine by AU under varying scenarios to assess a range of possible conditions. Our analysis examined area of impact for all stressors at the AU scale to abate variation and limitations within the data, and to have a comparable analysis across all stressors. All future scenarios may not be equally likely, but all are plausible, when considered at the rangewide scale, given the range of values presented for each stressor in the best available scientific information. We acknowledge that there may be significant differences and a large degree of variation when examining stressors at smaller landscape or stand scales; this localized information will be important to consider when planning future recovery actions.

Comment 12: A peer reviewer questioned the timing of mountain pine beetle outbreaks in our future scenarios (i.e., recurring every 30 years), given the slow growth rate of whitebark pine trees. They noted that it takes 25 to 30 years for a whitebark pine tree to grow to approximately 1.0- to 3.0-cm (0.4- to 1.2-in) diameter at breast height (dbh). Thus, they recommended that a longer time frame between mountain pine beetle outbreaks in the future scenarios would be more plausible and appropriate.

Our Response: We adjusted the parameters of our future scenarios to model mountain pine beetle outbreaks occurring every 60 years, rather than every 30 years. This is the minimum time it would likely take for enough individual trees in a previously attacked whitebark pine population to achieve diameters large enough to facilitate successful mountain pine beetle brood production at epidemic levels (Service 2021, p.

96). We then revised our analyses to project the extent of mountain pine beetle outbreaks under each future scenario, based on this new timeframe.

Comment 13: One peer reviewer stated that our predicted residence times of white pine blister rust infection, which were based on assessments of others' models, were incorrect or misleading, especially in the short term. They also stated that one of the models we referenced (Hatala et al. 2011, entire) assumed that white pine blister rust infection equaled mortality.

Our Response: We summarized the results from several models developed to predict residence times of white pine blister rust infection and project the long-term persistence of whitebark pine. These models looked at varying time frames, but most included long-term results. We find that these models present the best available science on potential impacts of white pine blister rust. The modeling effort by Hatala et al. (2011, entire) analyzed four possible white pine blister rust dynamic infection models and predicts that, on average, whitebark pine trees live with white pine blister rust infection for approximately 20 years before succumbing to the disease. Because this analysis shows that a whitebark pine tree can live, on average, for 20 years with white pine blister rust infection, the model could not have assumed that infection with white pine blister rust equated to immediate death of the whitebark pine tree (Service 2021, p. 48). In our SSA report, we discuss the various impacts that white pine blister rust has on whitebark pine and the various responses whitebark pine has to the infection, only one of which is mortality (Service 2021, p. 44). However, outcomes besides mortality can still have negative effects; for example, an infected whitebark pine tree that continues to survive enables the white pine blister rust fungus to produce spores, thereby continuing to perpetuate and intensify the disease (Service 2021, p. 44). Thus, while we did not assume areas experiencing white pine blister rust infection equated to areas with dead trees, we

find that areas with higher rates of infection are more likely to present negative outcomes for the species.

State Agency Comments

We received comments from State agencies on the proposed listing and 4(d) rule during the open public comment period. We summarize and respond to these below.

Comments on Biology, Ecology, Range, Distribution, or Population Trends

Comment 14: The California Department of Fish and Wildlife provided maps or data points of where they have observed whitebark pine. Some of this information specifically indicated elevations at which the species occurs throughout different portions of its range, including areas in Washington, Oregon, and California.

Our Response: Our range maps and analysis in the SSA incorporated and considered the elevations at which the species occurs throughout its range, which these commenters referenced. While the whitebark pine's range was depicted at a coarse scale in the SSA report, it encompasses all known occurrences and the current distribution of whitebark pine (Service 2021, p. 17). Thus, these data from the California Department of Fish and Wildlife did not represent new information, nor did they change our analysis or conclusions.

Comments on Stressors

Comment 15: The California Department of Fish and Wildlife stated that the geographic isolation of whitebark pine stands has resulted in low genetic diversity between populations (i.e., greater genetic diversity within populations than between them) and, as a consequence, whitebark pine demonstrates high rates of self-pollination and biparental inbreeding.

Our Response: Whitebark pine has higher rates of inbreeding than most other wind-pollinated species, likely due to Clark's nutcracker dispersal; Clark's nutcracker can deposit clumps of related seeds in the same vicinity, which leads to close proximity

of related mature trees (Keane et al. 2012, p. 14; Service 2021, p. 85). However, whitebark pine still exhibits a high level of genetic diversity across its range, similar to other widespread tree species (e.g., Mahalovich and Hipkins 2011, pp. 127–129; Service 2021, pp. 59, 85).

Comment 16: The California Department of Fish and Wildlife noted that timber harvest should be considered a threat to whitebark pine because timber-harvest projects on private lands have occurred in areas where whitebark pine is present. They asserted that there is potential for direct and indirect impacts on whitebark pine from timber harvest activities such as tree falling and skidding of intermingled commercial species, landing construction, road construction, site preparation, and artificial regeneration.

Our Response: In the SSA report, we acknowledge numerous factors that operate on whitebark pine at more local scales (see appendix B in the SSA report, Service 2021), affecting individuals or localized areas; however, these factors are likely not driving population dynamics of whitebark pine on a rangewide scale or at the species level. Further, as we discuss in **Provisions of the Final 4(d) Rule**, below, whitebark pine is not commercially harvested, and while timber harvesting could potentially affect individual trees or local areas, we found no threats at the species level resulting from timber harvest.

Comments on Modeling Analysis and Future Projections

Comment 17: The State of Idaho recommended we use a percentage of tree mortality to model potential mountain pine beetle effects in the future-scenario analysis in our SSA report and proposed rule. Specifically, they stated that the Service should distinguish between percent mortality (trees killed in a mountain pine beetle epidemic) and the percent of whitebark pine's range affected by a mountain pine beetle epidemic.

Our Response: Our future-scenario models were derived from data obtained from aerial surveys, which represent the best available information on mountain pine beetle infestations but are not appropriate for estimating the number of individual whitebark

pine trees killed by mountain pine beetles. However, they are very useful for determining a minimum number of hectares within the whitebark pine's range that mountain pine beetles have affected over time (i.e., recorded areas of beetle kill during surveys). Because mountain pine beetles only attack mature trees, the effects of mountain pine beetle attacks observed during aerial surveys can be interpreted as the loss of seed-producing mature trees (Service 2021, p. 80).

Comments on Section 4(d) Rule and Post-Listing Management

Comment 18: The State of Idaho expressed concern about the potential implications of the whitebark pine listing on forest management, sharing that States within the range of the species must be able to take action to limit high-severity fire, to address insect and disease outbreaks, and to improve overall forest health without the fear of litigation for violating the Act. The California Department of Fish and Wildlife stated that some whitebark pine stands (i.e., on the Modoc and Inyo National Forests) occur in areas where active vegetation management, primarily in the form of restoration, is occurring. In contrast to Idaho, the Wyoming State Forestry Division expressed that because 88 percent of whitebark pine is found on Federal land, human interaction is not a threat, and forest management is necessary for recovery; therefore, whitebark pine's listing will likely not lead to negative side effects.

Our Response: We have developed a species-specific 4(d) rule that is designed to address the whitebark pine's specific threats and conservation needs. We have concluded that the whitebark pine is at risk of extinction within the foreseeable future primarily due to the continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. The 4(d) rule will enhance the conservation of whitebark pine by prohibiting activities that would be detrimental to the species, while allowing the forest-management, restoration, and research-related

activities that are necessary to conserve whitebark pine. We recognize that forest managers currently conduct active vegetation and forest management in areas where whitebark pine trees are present. However, we found no threats at the species level resulting from vegetation- or forest-management activities. In fact, forest-management activities can be important to maintaining the health and resiliency of forest ecosystems that include whitebark pine. The exception in our 4(d) rule for forest-management activities on Federal lands, and any relevant future section 7 consultations Federal agencies would conduct on their activities, would likely facilitate the continuation of forest-management activities conducted by or authorized by relevant Federal land management agencies, as long as we reach the conclusion that these activities will not jeopardize the species.

In addition, we emphasize that the listing of whitebark pine and the species' 4(d) rule do not apply new prohibitions to State lands, private lands, or Tribal lands, besides the prohibitions on import, export, sale, and interstate and foreign commerce. The listing of whitebark pine, and its 4(d) rule, will not change the State of Idaho's ability to conduct forest-management, restoration, or research-related activities on non-Federal lands (e.g., State-owned lands, private lands), as long as these activities comply with other existing laws and regulations.

Comment 19: The State of Idaho requests that we clearly state that preparatory activities associated with implementing silviculture and forest-management activities (i.e., skid trails, roads) also do not "pose any threat to the whitebark pine in any form," given the importance of conducting these silvicultural and forest-management activities in such a way that reduces the risk of high-severity fires, insect infestations, and disease outbreaks.

Our Response: The exception in the section 4(d) rule that covers forest-management, restoration, or research-related activities on Federal properties also covers

any preparation that Federal agencies may need to conduct to implement forest-management, restoration, or research safely and effectively. However, Federal agencies will still need to fulfill their section 7 consultation obligations for any forest-management, restoration, or research-related activities, including associated preparatory tasks, even if these activities are excepted from the prohibitions in the 4(d) rule (see response to *Comment 22*, below). The section 7 consultation tools we will develop for the whitebark pine will streamline this consultation process in many cases. Additionally, given that the State of Idaho expressed these concerns, we also emphasize that the listing of the species and its section 4(d) rule do not apply new prohibitions to State lands, private lands, or Tribal lands, outside of the prohibitions on import, export, sale, and interstate and foreign commerce. The listing of whitebark pine and this 4(d) rule will not change the State of Idaho's ability to conduct forest-management, restoration, or research-related activities on non-Federal lands (e.g., State-owned lands, private lands), as long as there is no Federal nexus and these activities comply with other existing laws and regulations.

Comments on Listing Process and Policy

Comment 20: The State of Idaho expressed concern about our application of the Act's definitions of "endangered species" and "threatened species" in the proposed rule. While our proposed rule stated that we determine that the whitebark pine is not currently in danger of extinction but is likely to become in danger of extinction within the foreseeable future throughout all of its range, Idaho believed this was a misapplication of the definition of a threatened species, which is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Given that the text of our proposed rule said whitebark pine was likely to become "in danger of extinction" within the foreseeable future, rather than likely to become "an endangered species" within the foreseeable future, the State of Idaho

believed we incorrectly used the definition of a threatened species. They posited that we were trying to reference and incorporate the definition of an "endangered species," but the final rule should reflect the strict text of the statute's definition of a "threatened species" to avoid any confusion.

Our Response: Under the Act, "threatened species" is defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (16 U.S.C. 1532(20)); the definition of a "threatened species" in the Act thus references and incorporates the definition of an endangered species, which is any species which is in danger of extinction throughout all or a significant portion of its range (16 U.S.C. 1532(6)). We clearly provide the statutory definitions of "endangered species" and "threatened species" verbatim under *Regulatory Framework*, above, in this rule. While we state in some places in the proposed rule and this final rule that whitebark pine is "likely to become in danger of extinction within the foreseeable future," rather than "likely to become an endangered species in the foreseeable future," the term "in danger of extinction" is in the definition of an endangered species; thus, we merely replaced the term "endangered species" with the exact statutory definition of an endangered species, as this incorporation provides greater clarity to the public. Thus, we are stating in this rule that, while we do not find whitebark pine meets the definition of an endangered species, we find it does meet the definition of a threatened species under the Act, which we clearly articulate under **Determination of Whitebark Pine Status**, below.

Comments on Conservation Activities and Recovery

Comment 21: Many State and Tribal commenters submitted comments detailing past and future conservation actions for the species.

Our Response: We recognize ongoing and future conservation efforts for this species. A variety of regulatory mechanisms, as well as management and restoration

plans are in place, that currently benefit or influence whitebark pine, as described in the SSA report (Service 2021, pp. 119–125) and further detailed in these public comments. Many of these efforts have had positive impacts on the species on local or regional scales. However, given the vast geographic range of the species, the ubiquitous presence of white pine blister rust, and the lack of an effective means to control the disease, regulatory or nonregulatory mechanisms have an inherently limited ability to reduce the influence of white pine blister rust, and its cumulative impacts with other stressors, on a species-wide scale.

Federal Agency Comments

We received comments from Federal agencies on the proposed listing and 4(d) rule during the open public comment period. We summarize and respond to these below. Where a State and Federal agency raised similar concerns, we have included the State agencies' concerns along with the Federal agencies' concerns in a single summary below.

Comments on Section 4(d) Rule and Post-Listing Management

Comment 22: The Inyo National Forest requested that our proposed 4(d) rule more clearly explain the process a Federal agency would follow for section 7 consultation. They asked whether exceptions under the 4(d) rule would absolve Federal agencies of consultation requirements or whether excepted activities could be considered to have "no effect" on the species for the purposes of section 7 consultation given that the Service concludes in the proposed rule that these activities "are not a threat to whitebark pine in any form." The State of Idaho also raised questions on how section 7 consultation relates to section 4(d) rules and asked that section 7 consultation for silviculture and forest-management activities be exempted under the final 4(d) rule.

Our Response: Section 4(d) rules cannot and do not absolve Federal agencies of their consultation requirements under the Act. Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry

out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. As a result of these provisions in the Act, if a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must initiate consultation with the Service. Federal actions that do not affect listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

The trigger for consultation is whether a Federal action may affect a listed species or its critical habitat, not whether the action would violate prohibitions in any applicable 4(d) rule; thus, species-specific 4(d) rules, regardless of the activities they prohibit or allow, cannot change this requirement to consult. If a Federal action may affect a listed species, section 7(a)(2) of the Act requires consultation to ensure that the activity is not likely to jeopardize the species, regardless of the substance of any applicable 4(d) rule. Thus, if a Federal agency's action may affect whitebark pine, it must fulfill section 7(a)(2) consultation obligations in accordance with 50 CFR part 402. Unless the Service concurs with a Federal agency's determination that its action is not likely to adversely affect a listed species, formal consultation with the Service is required on all actions that may affect a listed species, even if the action will not result in a violation of a prohibition under the 4(d) rule. For instance, although removal and reduction to possession of whitebark pine in the course of forest management conducted by a Federal agency are not prohibited under the 4(d) rule, these types of activities are still subject to section 7(a)(2) consultation requirements if they may affect the species. Additionally, if a Federal agency determines that its action is not likely to adversely affect a listed species or its critical habitat, it must still receive the Service's written concurrence, even if its activity, and the result of its activity, are not prohibited by the 4(d) rule.

While we state in this rule that forest-management, restoration, and research-related activities do not pose a species-level threat to the whitebark pine, that does not imply these activities will never affect individuals or populations of the species. It is possible that an activity excepted under this 4(d) rule may affect individual whitebark pine trees or populations. In other words, in excepting forest-management, restoration, and research-related activities from the prohibitions imposed by the 4(d) rule, we are not stating that these activities have no effect on individual whitebark pine trees or populations under all circumstances. Thus, while we do except forest-management activities given that these activities are compatible with whitebark pine's conservation at the rangewide scale, we cannot remove the obligation of Federal agencies to consult with us if their forest-management activities may affect individual whitebark pine trees or populations.

However, even though 4(d) rules do not remove or alter Federal agencies' section 7 consultation obligations, we can and will develop tools to streamline consultation on Federal actions that may affect the whitebark pine and are consistent with the provisions of the 4(d) rule. We have added additional detail on this relationship between section 7 consultation and section 4(d) rules under **Provisions of the Final 4(d) Rule**, below.

Comment 23: The Inyo National Forest and public commenters expressed concern about new regulatory burdens that could prevent the USFS from conducting forest-management, research, and restoration activities, especially if they need to conduct consultation on excepted activities under the 4(d) rule, as this can take time and money away from actual project implementation. Public commenters likewise asked the Service not to impede essential active forest management in National Forests and elsewhere.

The Inyo National Forest requested that, if the Service were to develop a programmatic consultation for whitebark pine, it develop a process that is effective in protecting the species and monitoring its status, but also streamlined and efficient such

that it does not hinder land management agencies' ability to conduct forest management activities that would be excepted under the 4(d) rule. The State of Idaho also requested that we create a conference report to help guide decision makers and planners, reduce the section 7 consultation burden, and add efficiencies to the implementation of forest management that benefits the species.

Our Response: In the section 4(d) rule for whitebark pine, we provide an exception to otherwise applicable prohibitions for forest-management, restoration, and research-related activities. This 4(d) rule will enhance the conservation of whitebark pine by prohibiting activities that would be detrimental to the species, while allowing the forest-management, restoration, and research-related activities that are necessary to conserve whitebark pine; these forest-management, restoration, and research-related activities maintain and restore forest health on the Federal lands that encompass the vast majority of the species' habitat within the United States.

However, even with this exception in the 4(d) rule, Federal agencies must comply with relevant section 7 consultation requirements on any forest-management, restoration, or research-related activities that may affect whitebark pine, including activities that may affect individual trees or populations. Even though 4(d) rules do not remove or alter Federal agencies' section 7 consultation obligations, a 4(d) rule can facilitate simplification of formal consultations. For example, consistent with the discussion in the preamble to our August 27, 2019, final rule regarding prohibitions for threatened species (84 FR 44753, see p. 84 FR 44755), in choosing to except removal, damage, or destruction associated with certain activities in a 4(d) rule, we have already determined that these activities are compatible with whitebark pine's conservation at the rangewide scale (even if these activities may affect individual trees or populations), which can streamline our analysis of whether an action would jeopardize the continued existence of the species, making consultation more straightforward and predictable.

We are developing tools to streamline consultation on Federal actions that may affect the whitebark pine and are consistent with the provisions of the 4(d) rule. In combination with these streamlined section 7 tools, the protections in this section 4(d) rule should not discourage or impede effective forest management that promotes the conservation of the species and the ecosystems upon which it depends.

Tribal Comments

We received comments from Tribes on the proposed listing and 4(d) rule during the open public comment period. We summarize and respond to these below.

Comments on Section 4(d) Rule and Post-Listing Management

Comment 24: The Confederated Salish and Kootenai Tribes expressed their expectation that listing whitebark pine as a threatened species would not conflict or obstruct in any way their restoration strategies and goals, including the consumption of whitebark pine seeds in traditional Native American ceremonies.

Our Response: We recognize the importance of whitebark pine seeds to the cultural and religious practices of Tribal Nations. It is not our intent to limit Tribes' contributions to the species' restoration or to obstruct Tribes' ability to incorporate the species into their traditional practices. Because the prohibitions in the section 4(d) rule do not apply outside of Federal properties, the 4(d) rule will not affect Tribes' ability to conduct whitebark pine restoration on Tribal lands. The 4(d) rule as proposed also would have allowed consumption of seeds grown and collected on Tribal lands. However, the 4(d) rule as proposed would have prohibited such collection on areas under Federal jurisdiction (e.g., National Forests) without further authorization. Tribal collection of whitebark pine seeds from Federal lands for the purposes of ceremonial use or traditional consumption will not negatively affect whitebark pine at a rangewide scale, given the limited amount of collection that will likely occur (Service 2021, p. 34). Given that it was not our intent to infringe on Tribes' ability to collect whitebark pine seeds for ceremonial

or traditional use and because this collection does not present a threat to the species, we have added an exception to the final 4(d) rule to allow for this Tribal collection on Federal lands. However, if further authorization is required from relevant Federal agencies (e.g., if the USFS needs to issue a permit to allow a Tribal member to collect seeds on a National Forest), this further authorization would present a Federal nexus. Thus, in this example, the USFS would still need to comply with relevant section 7 consultation obligations before issuing a permit for a Tribal member to proceed with their collection of seeds.

Comment 25: The Nez Perce Tribe expressed concern that there is currently inconsistency in the regulatory measures and management for whitebark pine both across and within Federal land management agencies. The Tribe expressed concern about the continued persistence of whitebark pine without "standardized and adequate protection and conservation measures." They specifically expressed concern about how the Stibnite Gold Mine Project in Idaho could affect whitebark pine if the species lacks Federal protection because that project has the potential to remove up to 1,027 whitebark pine trees and impact up to 258 ac (104 ha) of occupied habitat.

Our Response: When the listing of whitebark pine as a threatened species under the Act becomes effective (see **DATES**, above), the protections provided in the 4(d) rule and the systems in the streamlined section 7 processes we develop for the species will provide consistency in the regulatory measures relevant to whitebark pine (see **Provisions of the Final 4(d) Rule**, below). For example, section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. As a result of these provisions in the Act, if a Federal action may affect a listed species or its critical habitat, the

responsible Federal agency (action agency) must initiate consultation with the Service. Thus, because we are listing whitebark pine as a threatened species under the Act, before Federal agencies can authorize development projects on Federal land, action agencies will need to consider whether these projects may affect whitebark pine (in addition to any other listed species in the action area). If the activities may affect any listed species, the Federal agency must initiate consultation with the Service. Therefore, section 7 consultation processes will ensure that development and extractive activities on Federal lands do not jeopardize the continued existence of whitebark pine, or any other listed species. We have not yet received a biological assessment for the Stibnite Gold Mine project, a proposed mining operation on Federal public land (namely USFS land) and private land in Idaho, and thus section 7 consultation has not yet occurred for the project; when it does occur, this consultation process will consider effects to whitebark pine, and any other listed species, as described above.

Public Comments

We received more than 4,000 comments from the general public on the proposed listing and 4(d) rule during the public comment period. We summarize and respond to these below. We do not, however, repeat issues that we have already addressed above; we address only new issues raised that were not raised by peer reviewers, State or Federal agencies, or Tribes.

General Comments about Listing

Comment 26: Many commenters stated their view that whitebark pine warrants listing as "endangered" rather than "threatened." In support of this assertion, these commenters pointed to (1) whitebark pine's vulnerability to climate change; (2) current and historical threats that are "pervasive and intensifying," highlighting the discussion of these threats in the SSA report; (3) the fact that stressors have worsened since the Service's substantial 90-day finding on the species (75 FR 42033; July 20, 2010); and (4)

the "endangered" listing status in Canada. One commenter referenced the statistic that 51 percent of all standing whitebark pine in the United States are dead as a result of a combination of threats as evidence of the "imminent peril of extinction the species faces" as further support for listing the species as endangered.

Our Response: We find that the whitebark pine does not meet the Act's definition of an "endangered species" because the species is still widespread throughout its extensive range, because a large number of trees will continue to thrive and reproduce for decades (given the species' long lifespan), and because there are some levels of genetic resistance to white pine blister rust across the range. The species' current levels of resiliency rangewide provide sufficient ability to withstand stochastic events such that it is not currently at risk of extinction. In addition, although there is uncertainty regarding how quickly white pine blister rust, the primary stressor, will spread within the three southwestern AUs (the Sierras, Basin and Range, and Klamath Mountains AUs) in the future, white pine blister rust currently occurs at low levels in these areas, adding to the whitebark pine's current resiliency. In addition, the species currently has sufficient redundancy and representation to withstand catastrophic events and maintain adaptability to changes, particularly in the southwestern part of the range, and is not at risk of extinction now. However, we expect that the stressors, individually and cumulatively, will reduce resiliency, redundancy, and representation within all parts of the range within the foreseeable future. Therefore, on the basis of the best available scientific and commercial information, we determine that the whitebark pine is not currently in danger of extinction, but is likely to become in danger of extinction within the foreseeable future, throughout all of its range.

Our analysis in the SSA report and in the proposed rule included the statistic that one commenter referenced regarding the percent of standing whitebark pine in the United States that is dead (Goeking and Izlar 2018, p. 7; Service 2021, p. 78; 85 FR 77408,

December 2, 2020, p. 77415). However, even considering these losses of trees due to disease, we find that the whitebark pine is not endangered because the species is still widespread throughout its extensive range.

In Canada, the COSEWIC designated whitebark pine as "endangered" under the Canadian SARA on June 20, 2012, due to the high risk of extirpation. However, the definitions of "endangered species" and "threatened species" under SARA differ from those under the Act, and Canada uses different processes to evaluate species' status. Thus, even while Canada determined that whitebark pine met the definition of an "endangered species" under SARA in 2010, that does not mean whitebark pine also meets the different definition of an "endangered species" under the Act. In fact, based on the best available scientific and commercial data, we have determined that whitebark pine meets the definition of a threatened species, rather than endangered species, under the Act primarily due to the continued increase in white pine blister rust infection and associated mortality; synergistic and cumulative interactions between white pine blister rust and other stressors, such as climate change; and the resulting loss of seed source.

Comment 27: One commenter stated that because the SSA report makes no conclusive finding regarding the probability of becoming endangered, because the SSA report indicates that the species is still widespread and expected to persist, and because any potential declines will vary regionally, the Service cannot argue that the species is likely to become endangered throughout a significant portion of its range.

Our Response: We find that the whitebark pine is not currently in danger of extinction because the species is still widespread throughout its extensive range, as this commenter emphasizes, because a large number of trees will continue to thrive and reproduce for decades (given the species' long lifespan), and because there are some levels of genetic resistance to white pine blister rust across the range.

We do not argue that the species will become endangered in a significant portion of its range (see *Status Throughout a Significant Portion of Its Range*, below). However, contrary to what is stated in the comment, it is not the role of an SSA to make conclusive findings regarding endangerment, and the fact that future declines will vary regionally is not inconsistent with our determination that the species is likely to become endangered in the foreseeable future. In the SSA report, we recognize that our projections of each of the stressors are based on averages of the best available data applied across very large areas of the range (i.e., at the AU scale) (Service 2021, p. 116). Therefore, based on these rangewide projections of the future influence of the four primary stressors, we find that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range.

Comment 28: Many commenters expressed opposition to the listing of whitebark pine, as they felt the Act either would not provide any benefit to the species or could even hinder efforts to conserve the species. One commenter claimed that listing the species under the Act will not help address the major threats of disease, fire, or climate change. Multiple commenters expressed that listing the whitebark pine could be detrimental to the species because it would make it more difficult to carry out important restoration efforts.

Our Response: Neither the Act's definitions of "endangered species" and "threatened species" nor the statutory factors that we must consider when applying those definitions allow us to consider the effects of listing when we determine the status of a species (16 U.S.C. 1532(6) and (20), 16 U.S.C. 1533(a)(1)). The statute states that we must make listing determinations based solely on the basis of the best available scientific and commercial information. Therefore, the question of whether there may be some positive benefit to the listing cannot by law enter into the determination. Once a species is listed as either endangered or threatened, the Act provides many tools to advance the conservation of listed species. Conservation measures provided to species listed as

endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. Specifically, section 4(f) of the Act requires us to develop and implement recovery plans for the conservation of endangered and threatened species. For more information on the recovery-planning process, see **Available Conservation Measures**, below.

We have also developed a species-specific 4(d) rule that is designed to address the whitebark pine's specific threats and conservation needs. We have concluded that the whitebark pine is at risk of extinction within the foreseeable future primarily due to the continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. The 4(d) rule will enhance the conservation of whitebark pine by prohibiting activities that would be detrimental to the species, while allowing the forest-management, restoration, and research-related activities that are necessary to conserve whitebark pine; these forest-management, restoration, and research-related activities maintain and restore forest health on the Federal lands that encompass the vast majority of the species' range within the United States. Specifically, the 4(d) rule provides an exception to allow Federal land management agencies to continue managing the forest ecosystems where the whitebark pine occurs and to continue conducting restoration and research activities that benefit the species, as long as these Federal agencies have also complied with all relevant section 7 consultation requirements. These activities include forest-management activities that reduce high-severity fire, address insect and disease outbreak, and improve overall forest

health. These activities pose no threat to the whitebark pine at the species level and can contribute to the species' conservation into the future. These prohibitions and exceptions are further discussed in **Provisions of the Final 4(d) Rule**, below.

Comment 29: One commenter opposed listing whitebark pine as threatened under the Act because whitebark pine has a large geographical range and is currently abundant and widespread. The commenter also noted that the SSA draws conclusions regarding future declines from a 180-year model that has substantial uncertainties. This commenter also believed the SSA analysis did not adequately account for the degree of variation in potential declines across the wide range of the species.

Our Response: There is inherent uncertainty in any projection of future conditions. However, based on the best available science, there is widespread agreement among whitebark pine experts that all key stressors are likely to continue to affect whitebark pine at levels above current conditions in the future (Service 2021, p. 91). The exact magnitude of effects from each stressor in the future is uncertain, which translates to uncertainty in predictions of whitebark pine viability in the future, and that uncertainty increases the further those predictions are carried into the future. In the SSA report, we identify specific areas of uncertainty that could lead to overestimates (species viability appears better than it actually is) or underestimates (species viability appears worse than it actually is) of viability (Service 2021, pp. 92–95, table 8). Our projections are based on long-term geospatial data sets and a large body of empirical data, and our multiple scenarios encompass the full range of conditions that could plausibly occur (Service 2021, pp. 96–98). We also focused our discussion of future viability in the SSA report on the 60-year (approximately one generation) timeframe where our confidence is greatest (Service 2021, p. 99).

We consider the foreseeable future, for the purposes of determining threatened status for whitebark pine, to be within 40 to 80 years. This timeframe encompasses the

full range of variation for the length of one generation for whitebark pine. In order to understand future extinction risk, we needed to examine the effects of stressors at least one generation into the future; considering effects of stressors over at least one generation allows us to capture the effects of these stressors on reproduction (i.e., it allows us to discuss whether sufficient reproduction can occur in the future to replace trees lost to various stressors). While we were able to project the extent of stressors more than one generation into the future (i.e., 180 years into the future) in our SSA, we simply extrapolated various rates of spread for three whitebark pine generations. Regardless of how far into the future we could extrapolate the expanding scope of stressors, our confidence is greatest with respect to the range of plausible projected changes to stressors for one generation due to increasing uncertainties in the interplay between disease and species' response (e.g., uncertainties regarding effects on species' genetics in the next generation of trees and how this would affect species' response to stressors, specifically white pine blister rust, in subsequent generations; uncertainties regarding compounding effects on reproduction after the next generation of trees). We can reasonably determine that both the future threats and the species' responses to those threats are likely within this 40- to 80-year timeframe (i.e., the foreseeable future), and we can reasonably rely on predictions over this time frame in determining the future conservation status of the whitebark pine.

In the SSA report, we also recognize that our projections of each of the stressors are based on averages of the best available data applied across very large areas of the range (i.e., at the AU scale) (Service 2021, p. 116). Given its extensive distribution, current impacts from stressors and levels of conservation efforts are highly variable across the range. Our analysis examined area of impact for all stressors at the AU-scale to abate variation and limitations within the data, and to have a comparable analysis across all stressors (Service 2021, p. 96). We acknowledge that there may be significant

differences and a large degree of variation when examining stressors at smaller landscape or stand scales.

Despite the limitations inherent in our future-conditions analysis, we have relied on the best available science to examine the current and future extent of white pine blister rust infection, mountain pine beetle infestations, and high-severity fire in each AU (capturing some level of variability in resiliency across the range of the species); as a result of the highly heterogeneous ecological settings of this widespread species (e.g., differences in topography, elevation, weather, and climate) and geographic variation in levels of genetic resistance to white pine blister rust, rates of whitebark pine decline will likely vary for each AU in the future (Service 2021, p. 116). We also note that our results are generally consistent with other modeling efforts for the species, all of which project continued decline of whitebark pine (e.g., Warwell et al 2007, entire; Hatala et al. 2011, entire; Keane et al. 2017b, entire; Angeli and McGowan, in prep., entire).

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that the whitebark pine is likely to become endangered within the foreseeable future throughout all of its range. This finding is based on anticipated reductions in resiliency, redundancy, and representation in the future as a result of continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. White pine blister rust is already ubiquitous rangewide, and there is currently no effective method to reverse its effects on a meaningful scale.

Comment 30: One commenter recommended that, instead of listing whitebark pine throughout its entire range, we should only list the whitebark pine that occurs in wilderness areas as a threatened species. This commenter claimed that the Act gives the Service the authority to geographically limit the listing in this way because section

4(c)(1) of the Act states that the Lists of Endangered and Threatened Wildlife and Plants shall refer to the species contained therein by scientific and common name or names, if any, specify with respect to each such species over what portion of its range it is endangered or threatened, and specify any critical habitat within such range (16 U.S.C. 1533(c)(1)). The commenter thus believed the Service had the ability to list whitebark pine in only a portion of its range, specifically the portion in Congressionally designated wilderness areas, even if this portion is not a "significant portion of the range." The commenter believed the Service's current "significant portion of the range" policy was "suspect," given that the courts have vacated parts of it; they especially believed the "all-or-nothing nature" of the policy, which requires the Service to list a species throughout their entire range even if they only meet the definition of a threatened species in a significant portion, violates the Act. Thus, the commenter believed we should be able to list whitebark pine as threatened in only a portion of its range (the portion in wilderness areas).

Our Response: We must comply with all current regulations, policies, and court opinions when making status determinations under the Act. Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. If we were to find that the species was endangered or threatened in a significant portion of its range, it would result in listing the species under the Act as such throughout all of its range. Thus, even if we found that the species met the definition of an endangered or threatened species only in designated wilderness areas (which we did not), that finding would still result in listing the species throughout the entirety of its range.

We note that this interpretation is required by the Final Policy on Interpretation of the Phrase "Significant Portion of Its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (Final Policy; 79 FR 37578, July 1,

2014), which by its terms is binding on the Service. Although some aspects of the Final Policy have been invalidated by the courts, this aspect has not. In fact, this aspect of the Final Policy adopts case law that expressly rejects the argument made by the commenter (see 79 FR at 37580).

Comment 31: Commenters expressed concern that the Service did not adequately consider the value of existing conservation efforts in its assessment of the Act's Factor D (the inadequacy of existing regulatory mechanisms). One of these commenters noted that, in the SSA report, the Service dismisses restoration work under the Range-Wide Conservation Strategy by stating that recent accomplishments conducted using this guidance are "too numerous to detail here." They noted that the Service is obligated under section 4(b)(1)(A) of the Act to consider State conservation efforts in its listing determinations. Moreover, they felt the Service did not acknowledge how a listing could interfere with these conservation efforts.

Our Response: The Act requires us to make a determination using the best available scientific and commercial data after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation to protect such species. In evaluating the status of whitebark pine, we considered the numerous ongoing conservation efforts detailed in the SSA report (Service 2021, pp. 119–125). However, while these programs may provide localized benefits to individuals or populations, they do not provide a reduction of the influence of key stressors at the species scale across the more than 32-million-ha (more than 80-million-ac) range of the species. Additionally, despite these existing regulatory mechanisms (Factor D) and voluntary conservation efforts, the stressors have continued to affect the species and are predicted to increase in prevalence in the future. Specifically, white pine blister rust is already ubiquitous rangewide, and there is currently no effective method to reverse its effects on a

meaningful scale. Although current planting efforts may be sufficient to restore whitebark pine at some local levels, the current rates appear to be insufficient to address the primary stressor (white pine blister rust) and restore whitebark pine on a scale large enough to ensure its continued viability (Service 2021, p. 47).

The listing of a species does not obstruct the development of conservation agreements or partnerships to conserve the species. Once a species is listed as either endangered or threatened, the Act provides many tools to advance the conservation of listed species. Conservation of listed species in many parts of the United States is dependent upon working partnerships with a wide variety of entities. Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The specific protective regulations for whitebark pine are discussed in **Provisions of the Final 4(d) Rule**, below.

Additionally, section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species, which will further collaboration for the recovery of whitebark pine. For more information on the recovery-planning process, see **Available Conservation Measures** in this rule.

Comments on Biology, Ecology, Range, Distribution, or Population Trends

Comment 32: A commenter noted that there is still much to learn about the successional ecology of whitebark pine. They noted that there are no scientific data supporting the idea that whitebark pine is shade-intolerant or successional to other tree

species and that these ideas are anecdotal throughout the literature. They requested that the Service make this clear.

Our Response: We used the best available scientific and commercial data to inform our discussion of whitebark pine's shade tolerance and successional ecology in the SSA report. We recognize that much uncertainty remains in our understanding of whitebark pine ecology, and that variation occurs throughout the wide range of the species. However, based on the best available information, including information provided in the public comments, we find that, in general, whitebark pine shows an intermediate level of shade tolerance and can be outcompeted and replaced by more shade-tolerant trees in the absence of disturbances like fire (Arno and Hoff 1989, p. 6; Service 2021, p. 22). Higher whitebark pine seedling density has been correlated with higher densities of nearby mature healthy whitebark pine, the presence of intermediate amounts of vegetation cover, and lower solar radiation (Leirfallom et al. 2015, p. 1603; Service 2021, p. 26).

Comment 33: One commenter recommended that the Service review specific provided survey reports of whitebark pine for the Klamath, Shasta Trinity, and Modoc National Forests in northern California to ensure our range maps reflect this particular occurrence data.

Our Response: Our range maps and analysis in the SSA report already incorporated the areas of whitebark pine presence that these commenters referenced. While the whitebark pine's range was depicted at a coarse scale in the SSA report, it encompasses all known occurrences and the current distribution of whitebark pine (Service 2021, p. 17). Thus, these data do not represent new information, and they did not change our analysis or conclusions.

General Comments on Four Primary Stressors (White Pine Blister Rust, Mountain Pine Beetle, Altered Fire Regimes, and Climate Change)

Comment 34: Multiple commenters expressed that we put too much emphasis on white pine blister rust as the primary threat to the species and insufficient focus on the potential impacts of mountain pine beetle, altered fire regimes, and climate change; many commenters believed that climate change should instead be identified as the primary threat because it exacerbates other primary stressors, could result in irreversible habitat loss, and will intensify in the foreseeable future. Commenters stated that there is no science to support the identification of white pine blister rust as the primary threat to the species. One commenter noted that the threat of white pine blister rust to whitebark pine is spatially, temporally, and situationally dependent. This commenter stated that, while white pine blister rust may be the primary threat in some areas, in other areas it is a secondary factor. Additionally, they noted that the natural resistance of whitebark pine populations to white pine blister rust is encouraging, indicating that natural selection of resistant whitebark pine could lead to decreasing importance of this stressor in the foreseeable future. One commenter cited several studies when concluding that climate change, mountain pine beetles, fire, and forest succession to shade-tolerant species all represent significant threats to the species and that a more holistic view of the threats is warranted. Multiple commenters worried that our lack of emphasis on these other stressors could result in recovery strategies inadequate to address the threats facing the species or could divert interest and resources away from other threats.

Our Response: Our analysis of the species' status found that the primary stressor driving the status of whitebark pine is disease (white pine blister rust). White pine blister rust also interacts with other stressors, including predation by mountain pine beetles, altered fire regimes, and climate change; we provided detailed analysis of the extent of the effects of these stressors in our SSA report (Service 2021, pp. 68–110). However, we do not consider altered fire regimes, climate change, or the mountain pine beetle to be the main drivers of the status of the species. In all three future scenarios analyzed in the SSA

report, the rate of decline appeared to be most sensitive to the rate of white pine blister rust spread, the presence of genetically resistant individuals (whether natural or due to conservation efforts), and the level of regeneration (Service 2021, pp. 116–117). Given that white pine blister rust led to the largest rangewide reductions in viability in our analysis, and given that there is currently no known remedy, we identified white pine blister as the primary threat to this species.

Additionally, while the frequencies, levels, and heritability of resistance identified to date are very encouraging, we expect the disease to continue to affect whitebark pine in the future. Trees that are rust resistant today only have known resistance to the current white pine blister rust strain (Service 2021, p. 46). Moreover, the number of genetically resistant individuals in some populations on the landscape may be low (Service 2021, p. 88). Management challenges to restoration include remoteness, difficulty of access, and a perception that some whitebark pine restoration activities conflict with wilderness values (Schwandt et al. 2010, p. 242). In addition, the vast scale at which planting rust-resistant trees would need to occur, long timeframes in which restoration efficacy could be assessed, and limited funding and resources will make it challenging to restore whitebark pine throughout its range. Based on modeling results (Ettl and Cottone 2004, pp. 36–47; Hatala et al. 2011, entire; Field et al. 2012, p. 180), we conclude that, in addition to the ubiquitous presence of white pine blister rust across the entire range of the whitebark pine, white pine blister rust infection likely will continue to increase and intensify within individual sites, ultimately resulting in stands that are no longer viable and that potentially face extirpation.

In the SSA report, we capture the variation in white pine blister rust prevalence that these commenters identify, illustrating that average infection levels are lowest in the southern analysis units (Klamath Mountains, Basin and Range, and Sierras); these AUs constitute more xeric habitats (Service 2021, p. 77). We acknowledge that there may be

significant differences and a large degree of variation when examining stressors at smaller landscape or stand scales, including variation in white pine blister rust infection; however, our projections of each of the stressors in the SSA are based on averages of the best available data applied across very large areas of the range (i.e., at the AU scale) (Service 2021, p. 116). Furthermore, the recovery-planning process will allow managers to address nuances in the species' needs and threats across whitebark pine's range to ensure we deliver appropriate and effective conservation measures in relevant locations.

Comment 35: One commenter recommended that we need to acknowledge that smaller, isolated whitebark pine populations occurring on mountain tops, such as those in the Klamath-Siskiyou and southern Cascade Mountains, are more susceptible to extirpation from repeated high-severity fire, mountain pine beetle outbreaks, and climate change.

Our Response: In the SSA report, we recognize that our projections of each of the stressors are based on averages of the best available data applied across very large areas of the range (i.e., at the AU scale) (Service 2021, p. 116). Given its extensive distribution, current impacts from stressors and levels of conservation efforts are highly variable across the range. Our analysis examined area of impact for all stressors at the AU-scale to abate variation and limitations within the data, and to have a comparable analysis across all stressors (Service 2021, p. 96). We acknowledge that there may be significant differences and a large degree of variation when examining stressors at smaller landscape or stand scales. As a result of the highly heterogeneous ecological settings of this widespread species (e.g., differences in topography, elevation, weather, and climate) and geographic variation in levels of genetic resistance to white pine blister rust, rates of whitebark pine decline will likely vary for each AU. Our current- and future-condition analyses illustrate variation in the percent of each AU that is currently or could be

affected by various stressors (Service 2021, pp. 68–83, 99–110). We relied on the best available science to examine the status of whitebark pine at a rangewide scale.

Comments on Altered-Fire-Regimes Stressor

Comment 36: A commenter stated that our future-viability scenarios rely on outdated science on the extent of past fires and, therefore, underestimate the likely future increase in annual area burned at high severity within the range of whitebark pine. The commenter noted that we projected a 5 to 10 percent increase in the annual amount of habitat burned at high severity based on research published from 2010 through 2017, but 8 of the 20 largest fires in California history have occurred since 2017, and the 2 largest fires in the Sierra Nevada in 2018 doubled the burned acreage of the previous record. Another commenter noted that large increases in fires have already been documented, particularly in the Northern Rockies where a historically healthy population of whitebark pine occurs.

Our Response: We acknowledge that the fire data in our current-condition analysis, which formed the baseline for our future-condition analysis, only presented acres burned between 1984 and 2016. The 33-year time period covered by this dataset provided the most comprehensive information for fire extent across all AUs in the whitebark pine's range. In the SSA report, we also project the proportion of each AU that high-severity fire is likely to affect in the future. Given current trends and predictions for future changes in the climate, we assume in all scenarios that the frequency of stand-replacing fires will increase, although the magnitude of that increase is uncertain (Keane et al. 2017b, p. 18; Westerling 2016, entire; Littell et al. 2010, entire). Because of that uncertainty, we chose what were likely conservative values of a 5 or 10 percent increase in high-severity fire above current annual levels.

We are aware that there have been several severe fire seasons since 2016, and the study of fire and climate change is a constantly evolving field. Given the large range of

whitebark pine, these additional localized fires do not substantially change our overall understanding of the extent of the species' range that has been affected by fire or could be affected in the future. Between 1984 and 2016, a minimum of 1,273,583 ha (3,147,092 ac) of whitebark pine habitat burned in high-severity fires, equating to approximately 5 percent of the species' range within the United States. Data from Monitoring Trends in Burn Severity on acres burned in the United States is now available through 2019. Between 2016 and 2019, an additional 0.8 percent of the whitebark pine's range within the United States (or 191,459 ha (471,105 ac)) burned at high severity. In other words, nearly 13 percent of the ac that have burned at high severity within the range of whitebark pine in the United States since 1984 burned in the 4 years between 2016 and 2019. This increasing extent of high-severity fire impacts in recent years validates our model assumptions that the frequency of high-severity fire will increase in the future. We find that the three future scenarios we modeled still capture the plausible range of potential increases in high-severity fire into the future.

Thus, these recent fire seasons do not change our conclusions regarding the species' status, especially because white pine blister rust remains the primary driver of species' status. Despite these additional fires, we find that the whitebark pine is not currently in danger of extinction because the species is still widespread throughout its extensive range, because a large number of trees will continue to thrive and reproduce for decades (given the species' long lifespan), and because there are some levels of genetic resistance to white pine blister rust across the range. However, we expect that the stressors, individually and cumulatively, will reduce resiliency, redundancy, and representation within all parts of the species' range within the foreseeable future.

Comment 37: Several commenters found that our assessment of the role of fire in whitebark pine ecosystems was overly simplified and did not account for possible variation in different communities (e.g., climax communities, subalpine communities,

trees above treeline). They stated that we did not adequately consider the wide variety of forest types, and therefore fire regimes, in which whitebark pine occurs, and how these could result in differential effects of fire in the future.

Our Response: In the SSA report, we recognize that our future projections of the effects of each of the stressors are based on averages of the best available data applied across very large areas of the range (i.e., at the AU scale) (Service 2021, p. 116). Given its extensive distribution, current impacts from stressors and levels of conservation efforts are highly variable across the range. However, our analysis examined areas of impact for all stressors at the AU-scale to abate variation and limitations within the data, and to have a comparable analysis across all stressors (Service 2021, p. 96). We acknowledge that there may be significant differences and a large degree of variation when examining stressors at smaller landscape or stand scales (e.g., for climax communities of whitebark pine). Although there is variation in the degree to which specific stands have been affected, over the range of whitebark pine, the widespread incidence of poor stand health and reduced reproductive capacity from disease and predation, coupled with changes in fire regimes due to climate change, has compromised and will continue to compromise regeneration of whitebark pine in many cases (Tomback et al. 2008, p. 20; Leirfallom et al. 2015, p. 1601). Overall, these factors increase the likelihood of negative effects to whitebark pine populations from fire, especially from high-severity fires that can cause widespread tree mortality.

Comment 38: One commenter stated that we did not adequately address the threat of prescribed fire on whitebark pine. This commenter indicated that not all forest types where whitebark pine occurs have naturally occurring fires dominated by low-severity fire effects (dynamics that prescribed fire can mimic). Whitebark pine seedlings, saplings, and mature trees in subalpine forests could be negatively affected by prescribed fire, because these forest types are not adapted to a frequent fire regime and plants could

experience mortality from this activity. The commenter further noted that whitebark pine is fire-intolerant and not well adapted to fire because it does not exhibit phenotypic characteristics consistent with fire-resistant conifers (i.e., thick bark). However, the commenter noted that fire favors whitebark pine regeneration by creating canopy openings and reducing competing vegetation in areas with an adequate seed source and dispersal mechanisms (Clark's nutcracker seed caching or humans planting whitebark pine seedlings). Whitebark pine seedlings and saplings are likely present in the subalpine forests proposed for prescribed burning. In the absence of fire, this naturally occurring whitebark pine regeneration would continue to occur as an important part of the subalpine ecosystem.

Several commenters also expressed concern regarding the use of prescribed burning in whitebark pine systems, including concerns about the use of prescribed burning in areas where whitebark pine seed sources are scarce or where significant seedling regeneration is occurring.

Our Response: We incorporated additional information on whitebark pine's ability to resist low-intensity fire and the role of low-severity fire in whitebark pine ecology into our discussion of altered fire regimes in the SSA report (Service 2021, pp. 36–37); we also updated our discussion of prescribed fire as a restoration strategy in appendix A of the SSA report, based on information provided in the comments. Although this information is important and relevant to the management and recovery of whitebark pine, it does not significantly affect our understanding of the threats to the species or our listing determination. Any loss of whitebark pine to low-intensity fire (including prescribed fire) would primarily affect individuals at the stand scale and is unlikely to affect the species' broader distribution (Service 2021, pp. 41, 68–69).

We will continue to update our understanding of the role of prescribed burns and low-severity fire as we develop a recovery plan for whitebark pine. The recovery-

planning process will ensure that we use the best available science to inform the identification of effective recovery strategies, including appropriate use of prescribed burning.

Comments on Climate-Change Stressor

Comment 39: A commenter stated we did not consider the direct effects of climate change on whitebark pine phenology and that habitat-niche modeling could be used to determine the extent to which climate change is likely to result in habitat loss. Citing recent research, the commenter noted that whitebark pine is predicted to decline throughout its current range under all future climate scenarios and that niche modeling could be used to spatially define and quantify this potential loss of habitat.

Our Response: In the SSA report, we acknowledge that habitat loss is anticipated to occur across the range of whitebark pine due to the direct and indirect effects of climate change (Service 2021, p. 58). Additionally, we acknowledge numerous studies that predict that whitebark pine will decline throughout its range (Service 2021, pp. 61–63). Habitat-niche modeling, as this commenter recommended, can be a useful tool for assessing projected changes in populations or smaller portions of the range of whitebark pine when planning conservation strategies for the species; however, modeling the synergistic effects of the four primary stressors, including climate change, introduces high levels of uncertainty and is beyond the scope of the analysis for our SSA. Although niche modeling may help illuminate localized differences in projected future impacts of climate change throughout the species' range, such refinement would not change our overall determination that whitebark pine warrants protection under the Act as a threatened species. The references this commenter provided are incorporated into the final SSA report.

Comment 40: One commenter stated that, in contrast to our focus in the SSA on the effects of climate change on whitebark pine habitat suitability (i.e., where

temperatures will exceed the thermal tolerance of the species), the primary adverse effect of climate change on whitebark pine is the relaxation of constraining conditions for competing conifers (Greenwood and Jump 2014, entire) and improved environment for insect predators (Logan and Powell 2001, entire; Logan et al. 2009, entire).

Our Response: In the SSA report, we acknowledge that climate change may result in conditions favorable to competing species (Service 2021, p. 60), and that warming temperatures created the unprecedented nature of the most recent mountain pine beetle outbreak (Service 2021, p. 52). Our analysis of the impacts of insect predators considers scenarios in which climate change would exacerbate the impacts of mountain pine beetles (Service 2021, pp. 97–98). We added the reference this commenter provided (Greenwood and Jump 2014, p. 835) to the relevant discussion of mountain pine beetles in the SSA report (Service 2021, p. 60). We already cite Logan and Powell (2001, p. 167) in the SSA report to support our discussion of climate change and insect predators (Service 2021, p. 52); the SSA cites Logan et al. (2010, p. 895), which is a more recent study with updated conclusions than Logan et al. (2009), the paper the commenter provided (Service 2021, p. 52). Given that these assumptions were already considered in the assessment and analysis, our determination that whitebark pine warrants protection under the Act as a threatened species remains unchanged.

Comment 41: A commenter stated that, contrary to our analysis, mature whitebark pine trees are not affected by climate change. This commenter claimed that mature whitebark pine have survived past climate cycles similar to the climate cycle we are currently experiencing; therefore, there is no science supporting the idea that climate change is associated with whitebark pine declines. The commenter also claimed that the proposed rule is speculative in stating that whitebark pine is unable to adapt as fast as competing plants to changing conditions. They asserted that whitebark pine survived a similar climate-cycle change in the 1930s and the Service did not provide any science or

information explaining why other plants did not outcompete whitebark pine at that time. The commenter anecdotally noted that there are very few areas in Idaho with evidence of plant competition contributing to whitebark pine population declines; old mature trees have not been crowded out, but instead died due to predators or fire. The commenter did note that climate is associated with the length of the fire season, and longer fire seasons are associated with an increase in fire-killed whitebark pine.

Our Response: Our SSA report discusses the best available science on how climate change could affect whitebark pine, including the best available information regarding the species' ability to adapt to future changes in climate (Service 2021, pp. 57–63); this commenter did not provide any new research or references to support their claims that our assessment is inaccurate. Within the species' current range, future changes in climate will likely exceed the climatic variation the whitebark pine has experienced in the past century and will likely last longer. For example, using the A2 scenario (which assumes a global average surface warming of 6.1 degrees Fahrenheit (°F) (3.4 degrees Celsius (°C))), the USFS's climate envelope modeling projects that, by 2090, temperatures could increase 9.1 °F (5.1 °C) within the range of the species; this would cause whitebark pine's suitable climate to contract to the highest-elevation areas in the northern Shoshone National Forest and Greater Yellowstone Ecosystem, or could cause whitebark pine to be extirpated from these areas (Rice et al. 2012, p. 31).

As we discuss in greater detail in the SSA report (Service 2021, pp. 57–63), the pace of predicted climate change will outpace many plant species' abilities to respond to the concomitant habitat changes. Whitebark pine may be particularly vulnerable to warming temperatures because it is adapted to cool, high-elevation habitats. Therefore, current and anticipated warming is expected to make its current habitat unsuitable for whitebark pine, either directly or indirectly as conditions become more favorable to whitebark pine competitors, such as subalpine fir or mountain hemlock. The rate of

migration needed to respond to predicted climate change will be significant (Malcolm et al. 2002, pp. 844–845; McKenney et al. 2007, p. 941). It is not known whether whitebark pine is capable of migrating at a pace sufficient to move to areas that are more favorable to survival as a result of climate change. It is also not known the degree to which Clark's nutcracker could facilitate this migration. In addition, the presence of significant white pine blister rust infection in the northern range of whitebark pine could serve as a barrier to effective northward migration. Whitebark pine survives at high elevations already, so there is little remaining habitat for the species to migrate to higher elevations in response to warmer temperatures. Adaptation in response to a rapidly warming climate could also be unlikely as whitebark pine is a long-lived species with a long generation time. Climate models project that climate change is expected to act directly and indirectly to significantly decrease the probability of rangewide persistence in whitebark pine within the next 100 years. This time interval is less than two generations for this long-lived species.

Comments on Other Stressors

Comment 42: Multiple commenters expressed concern about other stressors that they believed could further affect whitebark pine, including: (1) High levels of backcountry recreation on the John Muir Trail in the Sierra Nevada, which is leading to overcrowding campsites, illegal campfires, and human waste; (2) cross-country over-snow vehicle use (commenters provided several studies and examples of damage to whitebark pine trees from over-snow vehicle use); and (3) ski areas (commenters claimed that the proposed Mount Ashland Ski Area Expansion and other recreational activities in the Klamath-Siskiyou Mountains can result in the trampling of seedlings).

Our Response: We have concluded that the whitebark pine is likely to become endangered within the foreseeable future primarily due to the continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative

interactions between white pine blister rust and other stressors, and the resulting loss of seed source. White pine blister rust is not human-spread or influenced by human activity, and few restoration methods are currently available to restore whitebark pine in areas affected by the disease.

We acknowledge there are numerous other factors that operate on whitebark pine at local scales (see appendix B in the SSA report), affecting individuals or local areas, including recreation; however, these factors are likely not driving population dynamics of whitebark pine on a rangewide scale or at the species level (Service 2021, p. 34). According to the best available science the four stressors influencing the status of whitebark pine are white pine blister rust, altered fire regimes, mountain pine beetle, and climate change (Keane and Arno 1993, p. 44; Tomback et al. 2001, p. 13; COSEWIC 2010, p. 24; Tomback and Achuff 2010, p. 186; Keane et al. 2012, p. 1; Mahalovich 2013, p. 2; Mahalovich and Stritch, 2013, entire; Smith et al. 2013, p. 90; GYWPMWG 2016, p. v; Jules et al. 2016, p. 144; Perkins et al. 2016, p. xi; Shanahan et al. 2016, p. 1; Shepherd et al. 2018, p. 138). While we recognize these concerns regarding localized recreation activities, we found no information suggesting that recreation is occurring or could occur at a scope or scale that would produce species-level declines. Therefore, we did not analyze recreation as a threat to whitebark pine in our determination of species' status.

However, section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. As a result of these provisions in the Act, if a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must initiate consultation with us. For example, before any approval of ski area expansions on Federal land, action agencies will need to consider whether this expansion may affect whitebark

pine (or any listed species in the action area). If the activities may affect any listed species, the Federal agency must initiate consultation with us. Therefore, the section 7 consultation processes will ensure that recreational activities on Federal lands do not jeopardize the continued existence of whitebark pine or any other listed species.

Comment 43: A commenter claimed that we inadequately analyzed the impacts of whitebark pine decline on ecosystem integrity, given the whitebark pine's important role in community dynamics. This commenter also believed our analysis of individual threat factors under the Act was inadequate because it does not consider the complicated interplay between whitebark pine decline, impacts on Clark's nutcracker populations, stand and disturbance structure conducive to recolonization via Clark's nutcracker seed caching, seed-predator relationships, ectomycorrhizal fungi communities, stand-composition characteristics, and mountain pine beetle populations. They asserted that the concept of identifying a single primary factor driving the status of the species does not fulfill the intent of the Act, as it does not address the potential loss of these essential community relationships due to the cumulative decline of whitebark pine.

Our Response: In both the SSA report and this rule, we acknowledge and discuss the cumulative impacts of stressors on whitebark pine (Service 2021, pp. 110–116). Each of the stressors (white pine blister rust, altered fire regimes, mountain pine beetle, and climate change) acts individually and cumulatively on portions of the whitebark pine's range, and interactions between stressors have further exacerbated the species' decline and have reduced its resiliency; while we acknowledge white pine blister rust as the main driver of the species' status, we identify these synergistic interactions as a factor further influencing the threatened status of the species.

Additionally, Service policy calls for an ecosystem approach to carrying out programs for fish and wildlife conservation (59 FR 34273, July 1, 1994). The goal of this approach is to contribute to the effective conservation of natural biological diversity

through perpetuation of dynamic, healthy ecosystems when carrying out our various mandates and functions. Preserving and recovering endangered and threatened species is one of the more basic aspects of an ecosystem approach to conservation. Successful recovery of an endangered species or threatened species requires that the necessary components of its habitat and ecosystem be conserved, and that diverse partnerships be developed to ensure the long-term protection of those components. Thus, the recovery process for whitebark pine will inevitably involve this consideration of the synergistic community relationships the commenter references. That said, a desire to achieve or maintain "ecological effectiveness" (i.e., occupancy with densities that maintain critical ecosystem interactions and help ensure against ecosystem degradation) (Soule et al. 2003, p. 1239) is not relevant to the Act's definitions of "endangered species" or "threatened species," and is not one of the factors that we consider under the Act's section 4(a)(1) in making listing determinations.

Comment 44: A commenter claimed that because a recent assessment of threats to listed species found that habitat loss is often identified as a significant threat in most listing decisions, habitat loss must therefore be a significant threat to whitebark pine.

Our Response: We acknowledge that habitat loss is anticipated to occur across the range of whitebark pine due to the direct and indirect effects of climate change (Service 2021, p. 58). However, the habitat needs of whitebark pine are flexible and not specific, as evidenced by the fact that the species is extremely widespread, occupying a wide range of elevations, slopes, forest-community types, latitudes, and climates across its 32,616,422-ha (80,596,934-ac) range (Service 2021, pp. 14–16). In other words, habitat for whitebark pine is plentiful, and is not a limiting factor determining the distribution of the species. In addition, given that the vast majority of the species' range (88 percent) is on federal public lands and 29 percent of the species range is designated as wilderness, habitat loss due to human development or other direct destruction of habitat is less likely

to occur in a large portion of the species' range. Therefore, we do not consider habitat loss as a primary threat driving the status of whitebark pine. In all three future scenarios analyzed in the SSA, the rate of decline appears to be most sensitive to the rate of white pine blister rust spread, the presence of genetically resistant individuals (whether natural or due to conservation efforts), and the level of regeneration (Service 2021, pp. 116–117). Given that white pine blister rust led to the largest rangewide reductions in viability in our analysis, and given that there is currently no known remedy, we identify white pine blister rust as the primary threat for this species. White pine blister rust also interacts with other stressors, including predation by mountain pine beetles, altered fire regimes, and climate change.

Comment 45: One commenter found that the proposed rule did not address the effects of the USFS's Roadless Area Conservation rule (66 FR 3244; January 12, 2001), despite the presence of non-wilderness roadless areas within the species' range. The commenter noted that the January 12, 2001, rule imposes significant constraints on the ability to harvest timber or reduce fuels in roadless areas. Relatedly, one commenter noted that the Service failed to analyze the effects of the USFS's Roadless Area Conservation; Applicability to the National Forests in Idaho rule (73 FR 61456; October 16, 2008) on whitebark pine or if listing the species would necessitate changes to that rule. The commenter stated that whitebark pine occurs in areas designated by the October 16, 2008, rule, and that rule classifies areas in several categories with varying management restrictions.

Our Response: As we discuss in appendix A of the SSA report, the remote and challenging terrain in which whitebark pine frequently exists presents numerous logistical challenges for accessing sites for restoration. In non-wilderness roadless areas, much effort and costs may be required to transport equipment, seedlings, and personnel to work sites, whether by foot, livestock, or aerial means. Seasonal access to many sites is likely

to be brief due to abbreviated snow-free conditions at high elevations, which often coincides with summer fire seasons. As the level of accessibility to whitebark pine stands decreases, so does the number of available restoration options (Keane et al. 2012, p. 89), meaning fewer options to restore affected stands in more difficult-to-access sites. Similar to our approach to wilderness areas, in planning for the recovery of whitebark pine, we will ensure our strategies and our partners' conservation efforts respect the standards and limitations of roadless areas, while identifying practical means to deliver effective restoration.

Comments on Section 4(d) Rule and Post-Listing Management

Comment 46: One commenter asserted that, because the proposed rule did not provide managements plans or actions for recovering the species, the rule itself had no effect or impact and did not provide a clear legal standard for affected parties; they claimed this was a violation of Executive Order (E.O.) 12988.

Our Response: Under the Act, we are to make listing determinations "solely on the basis of the best scientific and commercial data" (16 U.S.C. 1533(b)(1)(A)). Other considerations must not be a part of our listing decisions.

That said, we believe this rule is consistent with E.O. 12988 (Civil Justice Reform). This rule will not unduly burden the judicial system. In this rule, we determine that whitebark pine meets the definition of a threatened species under the Act. We also finalize a species-specific 4(d) rule that is designed to address the whitebark pine's specific threats and conservation needs. The provisions of the 4(d) rule provide clear regulations concerning prohibited and allowed activities that could affect whitebark pine; in doing so, the 4(d) rule presents a clear legal standard for affected parties. Further, it is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed those activities that would or would not constitute a violation of section 9 of the Act. The intent of this

policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of the species. Our 4(d) rule, described in detail in **Provisions of the Final 4(d) Rule** below, provides this information. Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Wyoming Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Additionally, section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. This listing rule does not need to include strategies for recovery of the species. Instead, the recovery-planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. For more information on the recovery-planning process, see **Available Conservation Measures** in this rule.

Comment 47: A commenter claimed that thinning and prescribed fire associated with whitebark pine management conflicted with best management practices for grizzly bear (*Ursus arctos horribilis*).

Our Response: As we discuss in the SSA report, in some cases, while restoring whitebark pine may prove beneficial in the long term, restoration activities may present short-term impacts for other species (Service 2021, p. 135). For example, while grizzly bears use whitebark pine seeds as a food source in many parts of their range, restoration activities, and the associated human presence during these, may negatively affect individual bears in the short term, even if the long-term goal is improving an important component of their habitat. In 2017, we issued a biological opinion to the Idaho Panhandle National Forest for a large-scale whitebark pine restoration project that was determined to "likely adversely affect" grizzly bears in the area via the use of chainsaws, helicopters, and prescribed fire, along with the prolonged presence of humans in the work

area. It was determined that although the project may have short-term adverse effects on some bears, it would provide long-term beneficial effects and would not jeopardize the continued existence of grizzly bears.

More broadly, similar section 7 consultation processes will ensure that conservation efforts for whitebark pine do not jeopardize the continued existence of the grizzly bear or any other listed species. Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. As a result of these provisions in the Act, if a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must initiate consultation with us. Because both whitebark pine and grizzly bears will now be listed as threatened species, action agencies will need to consider whether their forest-management activities may affect either species, or any other listed species in the action area. If the activities may affect any listed species (including grizzly bears), even if their intended purpose is to benefit whitebark pine, the Federal agency must initiate consultation with us to evaluate these effects.

Comment 48: A commenter recommended modifying the proposed 4(d) rule to allow propagation and planting of rust-resistant whitebark pine on Federal lands.

Our Response: As proposed and as presented in this final rule, the 4(d) rule allows for propagation and planting of rust-resistant whitebark pine on Federal lands under its exception for restoration and research-related activities. However, the Federal agency with jurisdiction over the land where this planting would occur must also comply with all of the Act's section 7 consultation requirements relevant to this activity.

Comment 49: A commenter stated that the best tool for investigating the growth dynamics of long-lived trees is dendroecology, or tree-ring-based ecology, typically

involving increment cores. They noted that this activity is considered non-destructive and that the potential risks are greatly outweighed by the insights that tree-ring data provide into stand dynamics, mortality history, and the effects of climate change. The commenter urged the Service not to restrict researchers' ability to collect such data should whitebark pine be listed.

Our Response: This rule does not prohibit researchers from collecting cores of whitebark pine for research purposes from State, Tribal, or private lands. If a researcher wishes to collect these cores from whitebark pine trees on Federal properties, this activity would be excepted from the prohibitions in the 4(d) rule under the exception that covers research-related activities. However, even though this activity is allowed under the 4(d) rule, the researcher may need to obtain a special use permit from the Federal agency with jurisdiction over the area in which the researcher would like to collect cores before proceeding with their activity (e.g., a special use permit from the USFS). Because the issuance of a special use permit for this purpose is a Federal action, the relevant Federal agency would also need to fulfill the Act's section 7(a)(2) consultation obligations with us to evaluate whether the issuance of this permit could jeopardize whitebark pine or any other listed species. However, given that no research-related activities, including collection of cores, pose any threat to whitebark pine at the species level, this likely would be a straightforward consultation.

Comment 50: Several commenters requested that an exception for utility vegetation management, operations and maintenance, and fire-fuel reduction efforts be added to the 4(d) rule or be clarified as included in the existing exceptions.

Our Response: We recognize the importance of continuing vegetation management for public safety and fire prevention. Given that the 4(d) rule only prohibits removal and malicious damage or destruction of the species on Federal lands, utility companies can continue to manage and operate utility lines on private or State lands,

even if these activities affect whitebark pine, as long as there is no Federal nexus and as long as these activities are otherwise lawful. These vegetation-management activities do not present a threat to whitebark pine at the species level and may reduce the risk of high-severity fire through fuels reduction, which would benefit the species. Thus, we consider this utility vegetation management as part of "forest-management" activities, which means this maintenance activity for existing utility lines in Federal rights-of-way is covered by the exceptions to the prohibitions in this 4(d) rule, as long as this vegetation management is conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur and as long as this Federal agency has complied with all relevant section 7 consultation requirements in the Act. We added vegetation management of existing utility rights-of-way as an example of forest-management activities covered under the 4(d) rule in **Provisions of the Final 4(d) Rule**, below. Importantly, construction of new utility lines on Federal lands is not an excepted activity under the 4(d) rule (i.e., it is not forest management); if that construction could result in prohibited removal or damage of whitebark pine, Federal agencies and associated utility companies would need to pursue appropriate permitting and consultation processes.

Comment 51: A commenter recommended that we clarify in the preamble to any final listing rule for the whitebark pine that, in most circumstances, reinitiation of consultation will not be required for vegetation-management activities occurring within rights-of-way for electric transmission, distribution, or renewable energy on Federal lands as of the effective date of the final rule.

Our Response: We recognize that relevant Federal agencies have already completed section 7 consultations to analyze the effects of construction and maintenance of utility lines in Federal rights-of-way on currently listed species. However, if these existing consultations do not consider the effects of these actions on whitebark pine, Federal agencies will need to reinitiate consultation on these ongoing vegetation-

management activities if they may affect whitebark pine. Federal agencies are obligated to ensure that the activities that they authorize, such as maintenance of a utility line, do not jeopardize listed species, so they must reinitiate consultation if these existing consultations do not adequately examine whether these activities could jeopardize whitebark pine. However, as we discuss in our responses to *Comment 18* and *Comment 50*, above, these vegetation-management activities are excepted in the 4(d) rule because they do not present a threat to whitebark pine at the species level and may reduce the risk of high-severity fire, which would benefit the species. Thus, given that we find these types of activities would not present a species-level threat and may be beneficial, reinitiated consultation on the basis that these activities may affect the newly listed whitebark pine would likely be straightforward.

Comment 52: Two commenters requested that we expand the proposed 4(d) rule to permit active management of Federal forests.

Our Response: The 4(d) rule provides an exception to the prohibitions for all forest-management activities. Because no forest-management, restoration, or research-related activities pose any species-level threat to the whitebark pine in any form, we purposefully do not specify in detail what types of these activities are included in this exception, or how, when, or where they must be conducted, as long as they are conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur. Therefore, this 4(d) rule will allow the continuation of all forest-management, restoration, and research-related activities conducted by or authorized by relevant Federal land management agencies, as these activities pose no threat to the whitebark pine at the species level and can contribute to the species' conservation into the future.

However, while the 4(d) rule excepts forest-management activities because they do not present a species-level threat, section 7 concurrence or consultation will still be

required if a forest-management activity with a Federal nexus may affect whitebark pine, even if this activity would only affect individual trees or populations.

Comment 53: Two commenters recommended we amend the proposed 4(d) rule to not allow for unlimited logging in whitebark pine habitat. Another commenter stated that the proposed 4(d) rule, including its provisions for logging, will increase intensity, rate of spread, and severity of fire.

Our Response: Whitebark pine is not commercially harvested, and while some human activities could potentially affect individual trees or local areas, we found no threats at the species level resulting from timber harvest or forest-management activities. In fact, forest-management activities can be important to maintaining the health and resiliency of forest ecosystems that include whitebark pine, including reducing the risk of fire. Thus, we provide an exception in the 4(d) rule for all forest-management activities. Because no forest-management, restoration, or research-related activities pose any threat to the whitebark pine in any form at the species level, we purposefully do not specify in detail what types of these activities are included in this exception, or how, when, or where they must be conducted, as long as they are conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur. However, even with this exception in the 4(d) rule, Federal agencies must comply with relevant section 7 consultation requirements for any forest-management, restoration, or research-related activities that may affect whitebark pine, including activities that may affect individual trees or populations. This exception in our 4(d) rule, and the section 7 consultation Federal agencies may complete, will facilitate the continuation of forest-management, restoration, and research-related activities conducted by or authorized by relevant Federal land management agencies, as these activities pose no threat to the whitebark pine at the species level and can contribute to the species' conservation into the future.

Comments on Critical Habitat

Comment 54: While we received several comments supporting our proposal not to designate critical habitat for whitebark pine, a number of commenters recommended the species should receive critical habitat protections. One commenter asserted that we should designate critical habitat because the species is a foundation and keystone species. Multiple commenters claimed that we should be able to designate critical habitat, because we know the range of the species. Several commenters disagreed with the reasoning we used to support our "not prudent" determination. One commenter disagreed with our assessment that habitat is not limiting for whitebark pine. They stated that the species has a limited distribution due to the specific elevation, geography, and climate envelope it requires. They, and another commenter, assert that the range of whitebark pine could become more limited as climate change further limits suitable habitat. Another commenter claimed that we failed to explain why designation of critical habitat would not benefit the whitebark pine, which they claim is the only relevant consideration for invoking the "not prudent" exception. Even though they acknowledged that we may lawfully make a "not prudent" finding for reasons other than lack of benefit to whitebark pine, they claim that we still did not articulate why it would not be careful, circumspect, and cautious—i.e., prudent—to designate critical habitat.

Some commenters provided specific suggestions for areas to include as critical habitat. Several commenters recommended we designate critical habitat in areas that provide a seed source, that have white pine blister rust resistance, where trees may be additionally threatened by ski area expansions, and where seedlings may be vulnerable to crushing by snowmobiles and off-road vehicles. Another commenter recommended we designate critical habitat in areas that are most likely to support whitebark pine in a changing climate, even if they are currently unoccupied, citing several studies indicating that lower-elevation conifers will shift upward into whitebark pine habitat as a result of climate change and changing fire return intervals. Another commenter recommended we

develop spatial threat models for each of the significant threats to whitebark pine (e.g., white pine blister rust, mountain pine beetle, and high-severity fire) to inform the designation of critical habitat.

Our Response: As we discussed in the proposed rule for this species (85 FR 77408; December 2, 2020), section 4(a)(3)(A) of the Act directs the Secretary of the Interior to designate critical habitat to the maximum extent prudent and determinable and therefore allows for the possibility that designation of critical habitat may not be prudent. Our regulations (50 CFR 424.12(a)(1)) further detail several reasons the Secretary of the Interior may determine that a critical habitat designation would not be prudent; these regulations provide for the regulatory, rather than colloquial, definition of prudency as it pertains to the designation of critical habitat. One of these circumstances under which we may determine that designation of critical habitat is not prudent is if the present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species. We conclude that the present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the whitebark pine, and therefore designating critical habitat is not prudent for the species.

Climate change presents challenges to this species, which we summarize in detail in the SSA report (Service 2021, pp. 57–63). Climate models project that climate change is expected to act directly and indirectly, regardless of the emission scenario, to significantly decrease the probability of rangewide persistence in whitebark pine within the next 100 years (e.g., Warwell et al. 2007, p. 2; Hamann and Wang 2006, p. 2783; Schrag et al. 2007, p. 6; Rice et al. 2012, p. 31; Loehman et al. 2011, pp. 185–187; Chang et al. 2014, pp. 10–12). Whitebark pine may be particularly vulnerable to warming temperatures because it is adapted to cool, high-elevation habitats. Therefore, current and anticipated warming is expected to make its current habitat unsuitable for whitebark pine, either directly or indirectly as conditions become more favorable to whitebark pine

competitors, such as subalpine fir or mountain hemlock (Bartlein et al. 1997, p. 788; Hamann and Wang 2006, p. 2783; Schrag et al. 2007, p. 8; Warwell et al. 2007, p. 2; Aitken et al. 2008, p. 103; Loehman et al. 2011, pp. 185–187; Rice et al. 2012, p. 31; Chang et al. 2014, p. 10; Hansen and Phillips 2015, p. 74).

However, we recognize that there are many limitations to such modeling techniques, specifically for whitebark pine. For example, climate-envelope models use current environmental conditions in the distribution of the species' range to determine whether similar environmental conditions will be available in the future given predicted climate change. Whitebark pine, however, is a very long-lived species, and current environmental conditions may not closely resemble environmental conditions present when the trees currently on the landscape were established (Service 2021, p. 62). Additionally, these models also describe current environmental variables in averages taken over large areas. Whitebark pine may experience very different environmental conditions even over a small range, as individuals can be separated by thousands of meters (Service 2021, p. 62).

Thus, we acknowledge that climate change (Factor E) can present a threat to the whitebark pine, especially given that the impacts of climate change interact with and exacerbate other stressors such as mountain pine beetle (Factor C) and altered fire regimes (Factor E). However, in all three future scenarios analyzed in the SSA, the rate of whitebark pine decline appeared to be most sensitive to the rate of white pine blister rust spread, the presence of genetically resistant individuals (whether natural or due to conservation efforts), and the level of regeneration (Service 2021, pp. 116–117). Given that white pine blister rust led to the largest rangewide reductions in viability in our analysis, and given that there is currently no effective management action to reverse its effects on a meaningful scale, we identified white pine blister rust (disease, Factor C) as the primary threat for this species.

Furthermore, as we describe in further detail in our proposed rule (85 FR 77408; December 2, 2020), we do not view habitat as limiting for whitebark pine, which is widely distributed over a range of 32,616,422 ha (80,596,935 ac) (Service 2021, pp. 14–16); moreover, the habitat needs of the species are flexible and not specific (Service 2021, pp. 22–28). Therefore, we do not consider the present or threatened destruction, modification, or curtailment of a species' habitat or range to be a threat to the species.

Given that we determined that the present or threatened destruction, modification, or curtailment of the species' habitat or range is not a threat to the whitebark pine, under 50 CFR 424.12(a)(1) we may, but are not required to, determine that designation of critical habitat is not prudent. In light of the particular circumstances of the whitebark pine, we have in fact determined that designation of critical habitat is not prudent. We reach this conclusion largely because of the nature of the threats to this species, with the main driver of species' status being disease (white pine blister rust). Designation of critical habitat would not provide any additional protective measures or benefits that address this specific threat. In fact, designation of critical habitat could create an additional regulatory burden that could detract from efforts to propagate rust-resistant trees or to apply other management prescriptions to address the fungal disease. Designation of critical habitat would also not provide otherwise unavailable information to guide conservation efforts for the species. Therefore, a designation of critical habitat would not be advantageous for the species. We conclude that designation of critical habitat is not prudent for whitebark pine.

Comment 55: Several commenters recommended we should designate critical habitat because it could be a helpful tool to plan for conservation and prioritize management. Commenters provided several examples of the benefits that designation of critical habitat could provide, including, but not limited to, the identification of priority

areas for conservation and regeneration, stimulation of funding for conservation, and identification of management prescriptions to protect and recover the species.

Our Response: While we recognize the potential benefits these commenters present, we view most of these positive outcomes as benefits of listing whitebark pine, rather than benefits of designating critical habitat. While we cannot consider these benefits of listing in our determination of status, we acknowledge that the listing will assist our partners in the conservation and recovery of this species. Once a species is listed as either endangered or threatened, the Act provides many tools to advance the conservation of listed species. Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals.

The listing itself and the recovery-planning process for the species will provide these benefits independent of critical habitat designation, especially because the main stressor driving the status of the species is disease, not habitat destruction or modification. The recovery plan and future conservation efforts for this listed species can contemplate and encourage activities that address this main threat (i.e., white pine blister rust) without designation of critical habitat. For example, the recovery-planning process can identify priority areas for conservation, develop strategies to promote the conservation of genetic diversity and preservation of rust-resistant traits, propose ways to aid the species' adaptation to climate change, provide objectives for future research, provide guidance to Federal agencies on appropriate areas to reduce disturbance and productive ways to advance whitebark pine conservation in management plans, and clearly articulate management strategies that State and local governments can employ to conserve the species. Additionally, the listing will make funding under section 6 of the

Act available for species conservation, independent of any critical habitat designation. Finally, the protective regulations in our 4(d) rule, rather than critical habitat designation, provide the regulatory measures necessary to adequately protect the species and encourage research and management to address white pine blister rust and other threats facing the species. Because we determined that the present or threatened destruction, modification, or curtailment of the species' habitat or range is not a threat to the whitebark pine, designation of critical habitat is not necessary to protect against habitat degradation.

Comment 56: One commenter indicated that identifying and protecting critical habitat is a foundational tenet in both the USFS's Rangewide Restoration Strategy for Whitebark Pine and the Canadian SARA Recovery Strategy for the Whitebark Pine in Canada. By implementing critical habitat protections, the Service stands to bolster the efforts of programs such as the National Whitebark Pine Restoration Spatial Data Archive as they strive to provide a centralized hub of methods and data-management services to enable local land managers and scientists to collect and utilize the necessary inventory data.

Our Response: The recovery-planning process can effectively leverage the work of the National Whitebark Pine Restoration Spatial Data Archive and provide a clear roadmap for recovery that is based on the best available science. Given that the present or threatened destruction, modification, or curtailment of the species' habitat or range is not a threat to the whitebark pine, we have determined that designation of critical habitat is not prudent. We do not need to designate critical habitat to promote conservation of this species. We will use the recovery-planning process to encourage activities that address the threats and conservation needs of this species. This recovery-planning process will involve relevant stakeholders and build on existing conservation strategies and research.

Comments about Listing Process and Policy

Comment 57: One commenter asked whether hybridization with other five-needle pines (i.e., gene splicing) would allow the resultant trees to be considered whitebark pine and whether they would thus be protected under the Act.

Our Response: We are not aware of any viable hybridization between whitebark pine and other white pine species. While there was a suspected hybrid between whitebark pine and limber pine in Montana, this was a rare occurrence and resultant individuals were infertile (Fryer 2002, unpaginated).

Comment 58: A county expressed concern that they were not contacted during the assessment of whitebark pine's status nor invited to any conversations to discuss the potential listing.

Our Response: We worked with Federal, State, and other partners who were actively involved in broad-scale whitebark pine management or who had relevant scientific expertise on the species in the development of the SSA for whitebark pine prior to our decision to propose listing the species under the Act. The development of the SSA is not a process whereby outside parties can influence the listing decision; the decision to list a species under the Act rests with the Director of the Service alone (as delegated by the Secretary of the Interior) and must be made based on the best scientific and commercial data available. We notified all relevant counties when the proposed rule published, consistent with the requirements in 50 CFR 424.16(c)(10)(ii). The 60-day comment period for our December 2, 2020, proposed rule (85 FR 77408) provided sufficient opportunity for the public to provide input on the potential listing of the whitebark pine.

Comment 59: One commenter claimed this rule did not complete the required Office of Information and Regulatory Affairs (OIRA) review, violating E.O. 12866.

Our Response: Under E.O. 12866, OIRA within the Office of Management and Budget (OMB) has the authority to review "significant regulatory actions" that fall into

one of the following categories: (1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

The Act clearly prohibits us from considering economic or similar information when making listing, delisting, or reclassification decisions. Congress added this prohibition in the 1982 amendments to the Act when it introduced into section 4(b)(1) an explicit requirement that all determinations made under section 4(a)(1) of the Act be based "solely on the basis of the best scientific and commercial data available." Congress further explained this prohibition in the Conference Report accompanying the 1982 amendments to the Act (H.R. Conf. Rep. No. 97–835, at 19 (1982)).

The 1982 amendments were clear that we should avoid any consideration of non-biological information in the decision and should not introduce any additional delay in finalizing classification decisions. It has been our long-standing position that OMB does not have the authority to review classification rules under E.O. 12866 and that all phases of the classification process are exempt from the requirements of E.O. 12866; therefore, promulgating this final classification decision does not violate E.O. 12866.

Determination of Whitebark Pine Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines an "endangered species" as a species in danger of extinction throughout all or a significant portion of its

range and a “threatened species” as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of endangered species or threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the whitebark pine across its range in the United States and Canada. Our analysis of the current and future condition of whitebark pine found that four main stressors are affecting the species: White pine blister rust (Factor C), mountain pine beetle (Factor C), altered fire regimes (Factor E), and climate change (Factor E). We found white pine blister rust (Factor C) to be the main driver of the species’ current and future condition. White pine blister rust is currently ubiquitous across the range, and under all three future condition scenarios, it is expected to expand significantly. Under the three scenarios, within one generation, 52 to 88 percent of the range will be infected. The impacts of white pine blister rust combined with other stressors will reduce the ability of whitebark pine stands to regenerate (i.e., resiliency) following disturbances, such as fire and mountain pine beetle outbreaks. The decline is expected to be most pronounced in the northern two-thirds of the whitebark pine’s range, where white pine blister rust infection rates are predicted to be highest. Despite the existing regulatory mechanisms (Factor D) and voluntary conservation efforts summarized above in *Conservation Efforts and Regulatory Mechanisms* and discussed in additional detail in the SSA report (Service 2021, pp. 119–125), these stressors have

continued to spread and are predicted to increase in prevalence in the future. Our analysis did not find any stressors to be affecting the species at a population or species level under Factors A or B.

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that the whitebark pine is likely to become endangered throughout all of its range within the foreseeable future. This finding is based on anticipated reductions in resiliency, redundancy, and representation in the foreseeable future as a result of a continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. Specifically, based on the projections of how white pine blister rust, mountain pine beetle, and high-intensity fire could increase in scope, it is likely the species will lose a large number of reproductive adults in the foreseeable future; this loss of reproductive trees will lead to a substantial decline in the establishment of new seedlings, meaning new trees will not be able to replace lost trees sufficiently quickly given the species' long generation time. White pine blister rust is already ubiquitous rangewide, and there is currently no effective method to reverse its effects on a meaningful scale. In addition, 51 percent of whitebark pine trees in the United States are now dead (Goeking and Izlar 2018, p. 7). We conclude that within one generation of whitebark pine, the resiliency, redundancy, and representation of the species are likely to be so reduced that the species may not be able to produce another generation that has long-term viability.

For this long-lived species, we consider the foreseeable future to be at least 40 to 80 years into the future. This timeframe encompasses the full range of variation for the length of one generation for whitebark pine. In order to understand future extinction risk for the whitebark pine, we needed to examine the effects of stressors at least one generation into the future; considering effects of stressors over at least one generation

allows us to capture the effects of these stressors on reproduction (i.e., it allows us to discuss whether sufficient reproduction can occur in the future to replace trees lost to various stressors). While we were able to project the extent of stressors more than one generation into the future (i.e., 180 years into the future) in our SSA, we simply extrapolated various rates of spread for three whitebark pine generations. Regardless of how far into the future we could extrapolate the expanding scope of stressors, our confidence is greatest with respect to the range of plausible projected changes to stressors for one generation due to increasing uncertainties in the interplay between disease and species' response further into the future (e.g., uncertainties regarding effects on species' genetics in the next generation of trees and how this would affect species' response to stressors, specifically white pine blister rust, in subsequent generations; uncertainties regarding compounding effects on reproduction after the next generation of trees). We can reasonably determine that both the future threats and the species' responses to those threats are likely within this 40- to 80-year timeframe (i.e., the foreseeable future), and we can reasonably rely on predictions over this timeframe in determining the future conservation status of the whitebark pine. We conclude that the ongoing losses to the resiliency, redundancy, and representation of the whitebark pine will result in it becoming in danger of extinction within this foreseeable future.

We find that the whitebark pine is not currently in danger of extinction because the species is still widespread throughout its extensive range, because a large number of trees will continue to thrive and reproduce for decades (given the species' long lifespan), and because there are some levels of genetic resistance to white pine blister rust across the range. The species' current levels of resiliency rangewide provide sufficient ability to withstand stochastic events such that it is not currently at risk of extinction. In addition, although there is uncertainty regarding how quickly white pine blister rust, the primary stressor, will spread within the three southwestern AUs (the Sierras, Basin and Range,

and Klamath Mountains AUs) in the future, white pine blister rust currently occurs at low levels in these areas, adding to the whitebark pine's current resiliency. In addition, the species currently has sufficient redundancy and representation to withstand catastrophic events and maintain adaptability to changes, particularly in the southwestern part of the range, and is not at risk of extinction now. However, we expect that the stressors, individually and cumulatively, will reduce resiliency, redundancy, and representation within all parts of the range within the foreseeable future. Therefore, on the basis of the best available scientific and commercial information, we determine that the whitebark pine is not currently in danger of extinction, but is likely to become in danger of extinction within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity* v. *Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020) (*Everson*), vacated the aspect of the Final Policy on Interpretation of the Phrase "Significant Portion of Its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (hereafter Final Policy; 79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, following the court's holding in *Everson*, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and (2) the species is in danger of extinction now in that portion (i.e., endangered).

In undertaking this analysis for the whitebark pine, given the species' extremely wide range and because the range of this species can theoretically be divided into

portions in an infinite number of ways, we first identified portions that may warrant further review as a potentially significant portion of the range in which the species may be endangered. To do this, we first identified any portions of the range that may be both significant and in danger of extinction. We considered information pertaining to the geographic distribution of both the species and the threats that the species faces to identify these potentially significant portions of the range where the species may be endangered.

For each of these potentially significant portions of the range, we then further examined whether the portion is significant or whether the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the "significance" question or the "status" question first for these potentially significant portions of the range. We can choose to address either question first. In our analysis below, we address the significance question first for one potential portion and the status question first for another. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

In examining the status question, we note that the statutory difference between an endangered species and a threatened species is the time frame in which the species becomes in danger of extinction; an endangered species is in danger of extinction now while a threatened species is not in danger of extinction now but is likely to become so in the foreseeable future. Thus, we reviewed the best scientific and commercial data available regarding the time horizon for the threats that are driving the whitebark pine to warrant listing as a threatened species throughout all of its range. To determine whether whitebark pine was in danger of extinction in a particular portion of the species' range, we then considered whether these threats or their effects are currently occurring (or may imminently occur) in the portion with sufficient magnitude that the species is in danger of

extinction now in that portion of its range. We examined the following threats: White pine blister rust, mountain pine beetle, altered fire regimes, and climate change, including synergistic and cumulative effects.

To determine whether a portion was "significant," we considered how the portion contributes to the viability of the species. There are multiple ways in which a portion of the species' range could contribute to the viability of a species, including (but not limited to) by serving a particular role in the life history of the species (such as the breeding grounds or food source for the species), by including high-quality or unique-value habitat relative to the rest of the habitat in the range, or by representing a large percentage of the range.

During the first phase of our analysis, we identified two portions of the whitebark pine's range that warranted further consideration: the U.S. Canadian Rockies AU and the northern two-thirds of the range (which includes the following AUs: Nechako Plateau, Fraser Plateau, Thompson Plateau, Columbia Mountains, Canadian Rockies, Olympics, Cascades, Northern Rockies, Blue Mountains, Idaho Batholith, U.S. Canadian Rockies, and Middle Rockies (see Service 2021, figures 9, 11, 14)). We primarily identified these portions as necessitating further review because of the currently high incidence of white pine blister rust (the main driver of the species' status) in these portions of the range; these infection rates, and correspondingly large proportions of standing dead, could increase current extinction risk in these portions. Specifically, the U.S. Canadian Rockies AU currently has the highest proportion of white pine blister rust infection of any AU; white pine blister rust infects almost 74 percent of the AU. In addition, considering the range at a larger scale, white pine blister rust infection rates are currently the highest in the northern two-thirds of the whitebark pine's range. Having identified two portions that necessitated further review as potentially significant portions of the range in which

whitebark pine may be in danger of extinction, we proceeded to further examine either the significance or status question for each of these two portions.

For the U.S. Canadian Rockies AU, we chose to further examine the significance question first. Although every AU provides some contribution to the species' resiliency, representation, and redundancy, this AU only covers 6.6 percent of the species' vast range. In addition, we are not currently aware of any particular life-history functions that the AU serves or unique characteristics of the U.S. Canadian Rockies AU that are contributing meaningfully to the species' overall resiliency and representation, within the context of a "significant portion of its range" analysis. For example, although this AU is contiguous with other portions of the range, it is not operating as a source of seeds enhancing the resiliency of non-connected populations given the high incidence of disease and limited dispersal distance of Clark's nutcrackers. While continued restoration efforts will still be important in this AU, as in all portions of the species' range, this portion, by itself, will have only a minor impact on the overall viability of the species and, therefore, cannot be significant and cannot provide a basis for listing the entire species as endangered.

For the portion that constituted the northern two-thirds of the species' range, we chose to further examine the status question first (i.e., we chose to first evaluate whether the species is in danger of extinction now in this portion). As described above under **Summary of Biological Status and Threats**, white pine blister rust is more prevalent in the northern two-thirds of the species' range. The impacts of white pine blister rust combined with other stressors are expected to reduce the ability of whitebark pine stands to regenerate following disturbances. While we found differences in the prevalence of white pine blister rust in this portion of the whitebark pine's range, the timing of the effects of the threats and the species' responses to the threats in that portion are the same as that for the entire range—the foreseeable future. Despite the prevalence of white pine

blister rust and other stressors in the northern two-thirds of the whitebark pine's range, whitebark pine trees are still widespread throughout this extensive geographic area. Given their long lifespan and the presence of some levels of genetic resistance to white pine blister rust, whitebark pine trees are expected to persist on the landscape for many decades. As we discuss above, white pine blister rust may not immediately kill infected trees; many trees with white pine blister rust can live for decades before they succumb to the disease. Although the prevalence of the white pine blister rust threat to the whitebark pine is higher in the northern two-thirds of the species' range, the best scientific and commercial data available do not indicate that the species' responses to those threats are more immediate in the northern two-thirds of the species' range. Thus, we determine that the species is not in danger of extinction now in that portion of its range.

Therefore, after evaluating the U.S. Canadian Rockies AU and the northern two-thirds of the species' range, we determine that the species is not in danger of extinction now in any significant portion of its range, but that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This does not conflict with the courts' holdings in *Desert Survivors* v. *Department of the Interior*, 321 F. Supp. 3d 1011, 1070-74 (N.D. Cal. 2018), and *Center for Biological Diversity* v. *Jewell*, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017), because, in reaching this conclusion, we did not apply the aspects of the Final Policy's definition of "significant" that those court decisions held were invalid.

Determination of Status

Our review of the best available scientific and commercial information indicates that the whitebark pine meets the Act's definition of a threatened species. Therefore, we are listing the whitebark pine as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of those conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery-planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline that we make available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. The plan may be revised to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery

plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (*https://www.fws.gov/program/endangered-species*), or from our Wyoming Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands. When this listing becomes effective, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of California, Idaho, Montana, Nevada, Oregon, Washington, and Wyoming will be eligible for Federal funds to implement management actions that promote the protection or recovery of the whitebark pine. Information on our grant programs that are available to aid species recovery can be found at: *https://www.fws.gov/service/financial-assistance*.

Please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species

whenever it becomes available and any information you may have for recovery-planning purposes (see **FOR FURTHER INFORMATION CONTACT**, above).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must initiate consultation with us, even if these activities are excepted under the 4(d) rule described below.

Federal agency actions within the species' habitat that may require conference or consultation or both, as described in the preceding paragraph, include management and any other landscape-altering activities on Federal lands. We discuss this requirement in greater detail under **Summary of Comments and Recommendations**, above.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. The discussion below regarding protective regulations under section 4(d) of the Act complies with our policy.

II. Final Rule Issued Under Section 4(d) of the Act

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide

for the conservation of species listed as threatened. The U.S. Supreme Court has noted that statutory language like "necessary and advisable" demonstrates a large degree of deference to the agency (see *Webster* v. *Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife or include a limited taking prohibition (see *Alsea Valley Alliance* v. *Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana* v. *Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, "once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [her] with regard to the permitted activities for those species. [S]he may, for example, permit taking, but not importation of such species,

or [s]he may choose to forbid both taking and importation but allow the transportation of such species" (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising this authority under section 4(d), we have developed a final rule that is designed to address the whitebark pine's specific threats and conservation needs. Although the statute does not require us to make a "necessary and advisable" finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the whitebark pine.

As discussed above under **Determination of Whitebark Pine Status**, we have concluded that the whitebark pine is at risk of extinction within the foreseeable future primarily due to the continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. The provisions of this final 4(d) rule will promote conservation of the whitebark pine by encouraging management of the landscape in ways that meet land management considerations while also addressing the conservation needs of the whitebark pine, as explained further below. The provisions of this 4(d) rule are one of many tools that we will use to promote the conservation of the whitebark pine.

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must initiate consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of

Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq*.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

This obligation does not change in any way for a threatened species with a species-specific 4(d) rule. If a Federal action may affect a listed species, section 7(a)(2) requires consultation to ensure that the activity is not likely to jeopardize the species to satisfy the requirements in section 7(a)(2) of the Act, regardless of the substance of any applicable 4(d) rule. Thus, if a Federal agency's action may affect whitebark pine, it must fulfill section 7(a)(2) consultation obligations in accordance with 50 CFR part 402. Unless we concur with a Federal agency's determination that its action is not likely to adversely affect a listed species, formal consultation with us is required on all actions that may affect a listed species, even if the action will not result in a violation of a prohibition under the 4(d) rule. For instance, although removal and reduction to possession of whitebark pine in the course of forest management conducted by a Federal agency are not prohibited under the 4(d) rule, these types of activities are still subject to 7(a)(2) consultation requirements if they may affect the species. Additionally, if a Federal agency determines that its action is not likely to adversely affect a listed species or its critical habitat, it must still receive our written concurrence, even if its activity, and the result of its activity, are not prohibited by the 4(d) rule.

Even though section 4(d) rules do not remove or alter Federal agencies' section 7 consultation obligations, a section 4(d) rule can facilitate simplification of formal consultations. For example, as noted in our August 27, 2019, final rule regarding

prohibitions for threatened species (84 FR 44753), in choosing to except removal, damage, or destruction associated with certain activities in a 4(d) rule, we have already determined that these activities are compatible with the species' conservation, which can streamline our analysis of whether an action would jeopardize the continued existence of the species, making consultation more straightforward and predictable. We are developing tools to streamline consultation on Federal actions that may affect the whitebark pine and are consistent with the provisions of the 4(d) rule.

Provisions of the Final 4(d) Rule

As discussed above under **Summary of Biological Status and Threats**, white pine blister rust, mountain pine beetle, altered fire regimes, and the effects of climate change are affecting the status of whitebark pine. The final 4(d) rule provides for the conservation of the species by use of protective regulations, as described here. Within the United States, the vast majority of the species' range (approximately 88 percent) is located on Federal lands. Given the reductions in resiliency that have already occurred to varying degrees across the range (Service 2021, pp. 68–83), we are applying prohibitions equivalent to those of section 9(a)(2) of the Act to the whitebark pine. Specifically, this final 4(d) rule provides for the conservation of whitebark pine by prohibiting the following activities, unless otherwise authorized or permitted (e.g., allowed for in an exception or authorized in a section 10(a)(1)(A) permit):

- Import or export of the species;
- Delivery, receipt, transport, or shipment of the species in interstate or foreign commerce in the course of commercial activity;
- Sale or offer for sale of the species in interstate or foreign commerce;
- Removal and reduction to possession of the species from areas under Federal jurisdiction;

- Malicious damage or destruction of the species on any area under Federal jurisdiction; and

- Removal, cutting, digging up, or damage or destruction of the species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

These prohibitions and the exceptions described below apply to whitebark pine trees and any tree parts (such as cones, tree cores, seeds, branches, needles, etc.). The final 4(d) rule only addresses Federal requirements under the Act and does not change any prohibitions provided for by State law.

The following activities are excepted from the prohibitions identified above:

- Activities authorized by a permit under 50 CFR 17.72;

- Forest-management, restoration, or research-related activities conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur;

- Removal, cutting, digging up, or damage or destruction of the species on areas under Federal jurisdiction by any qualified employee or agent of the Service or State conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by that agency for such purposes, when acting in the course of official duties; and

- Collection of whitebark pine seeds from areas under Federal jurisdiction for Tribal ceremonial use or traditional Tribal consumption if the collection is conducted by members of federally recognized Tribes and does not violate any other applicable laws and regulations.

The prohibitions in this final 4(d) rule related to removing and reducing to possession and to maliciously damaging and destroying apply only to areas under

Federal jurisdiction. The prohibition related to removing, cutting, digging up, or destroying the species in other areas (i.e., areas not under Federal jurisdiction) applies only if those activities are in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law. Therefore, the exceptions to these prohibitions, other than the permitting exception, only apply to areas under Federal jurisdiction. We still encourage forest-management, restoration, and research-related activities on areas outside of Federal jurisdiction such as State, private, and Tribal lands within the United States or any lands within Canada; this 4(d) rule will not alter managers' ability to conduct these activities on non-Federal lands because the 4(d) rule does not prohibit these activities in the first place (unless these activities are already prohibited by State law or regulation).

We have concluded that the whitebark pine is likely to become endangered within the foreseeable future primarily due to the continued increase in white pine blister rust infection and associated mortality, synergistic and cumulative interactions between white pine blister rust and other stressors, and the resulting loss of seed source. This fungal disease is not human-spread or influenced by human activity, and few restoration methods are currently available to restore whitebark pine in areas affected by the disease. The whitebark pine is not commercially harvested, and while some human activities could potentially affect individual trees or local areas, we found no threats at the species level resulting from forest-management activities. In fact, forest-management activities can be important to maintaining the health and resiliency of forest ecosystems that include whitebark pine.

As described in the SSA report (Service 2021, pp. 125–131), most current whitebark pine management and research focuses on producing trees with inherited (genetic) resistance to white pine blister rust, as well as implementing mechanical treatments and prescribed fire as conservation tools. As part of this process, cones may be

collected from trees identified as apparently resistant to white pine blister rust, or "plus" trees. Additional areas of research involve investigating natural regeneration and silvicultural treatments, such as appropriate site selection and preparation (i.e., identifying areas where restoration will be most effective), pruning, and thinning to protect high-value genetic resources, increase reproduction, reduce white pine blister rust damage, and increase stand volume (Zeglen et al. 2010, p. 361).

Conservation measures for whitebark pine can generally be categorized as either protection (of existing healthy trees and stands) or restoration (of damaged, unhealthy, or extirpated trees and stands). Inventory, monitoring, and mapping of whitebark pine stands are critical for assessing the current status and implementing strategic conservation strategies. The precise nature of management, restoration, and research activities that are conducted may vary widely across the broad range of whitebark pine, as management of this species falls under numerous jurisdictions that encompass a spectrum of local and regional ecological, climatic, and management conditions and needs.

Broadly, the forest-management, restoration, or research-related activities referred to above may include, but are not limited to, silviculture practices and forest-management activities that address fuels management, insect and disease impacts, vegetation management in existing utility rights-of-way, and wildlife-habitat management (e.g., cone collections, planting seedlings or sowing seeds, mechanical cuttings as a restoration tool in stands experiencing advancing succession, full or partial suppression of fires in whitebark pine communities, allowing fires to burn, survey and monitoring of tree health status).

Because no forest-management, restoration, or research-related activities pose any threat to the whitebark pine at the species level, we purposefully do not specify in detail what types of these activities are included in this exception, or how, when, or where they must be conducted, as long as they are conducted or authorized by the Federal agency

with jurisdiction over the land where the activities occur; these activities may also vary in how they are conducted across the species' wide range. Therefore, this final 4(d) rule, and any relevant future section 7 consultations Federal agencies will conduct on their activities, will likely facilitate the continuation of forest-management, restoration, and research-related activities conducted by or authorized by relevant Federal land management agencies, as long as we reach the conclusion that these activities will not jeopardize the species, because these activities pose no threat to the whitebark pine at the species level and can contribute to the species' conservation into the future; this exception, and any relevant future section 7 consultations, also allow for flexibility to accommodate specific physical conditions, resource needs, and constraints across the species' vast range.

Similarly, collection of seeds by members of federally recognized Tribes for ceremonial use or traditional consumption does not present a threat to the species. The limited amount of collection Tribal members will conduct on Federal lands in certain parts of the species' range will not have species-level impacts, especially considering that many stands of whitebark pine are inaccessible for collection. Tribes within the range of the whitebark pine are important partners in the recovery of this culturally significant species; allowing Tribes to collect whitebark pine seeds for ceremonial and traditional use will only further their commitment to and participation in whitebark pine conservation.

We may also issue permits to carry out otherwise prohibited activities, including those described above, involving threatened plants under certain circumstances. Regulations governing permits for threatened plants are codified at 50 CFR 17.72, which states that that the Director may issue a permit authorizing any activity otherwise prohibited with regard to threatened species. That regulation also states that the permit shall be governed by the provisions of section 17.72 unless a special rule applicable to the

plant is provided in sections 17.73 to 17.78. On August 27, 2019, we revised section 17.71 to provide that section 17.71 will no longer apply to plants listed as threatened after September 26, 2019 (84 FR 44753). We did not intend for those revisions to limit or alter the applicability of the permitting provisions in section 17.72, or to require that every species-specific 4(d) rule spell out any permitting provisions that apply to that species and species-specific 4(d) rule. To the contrary, we anticipate that permitting provisions would generally be similar or identical for most species, so applying the provisions of section 17.72 unless a species-specific 4(d) rule provides otherwise would likely avoid substantial duplication. Moreover, this interpretation brings section 17.72 in line with the comparable provision for wildlife at 50 CFR 17.32, in which the second sentence states that the permit shall be governed by the provisions of section 17.32 unless a special rule applicable to the wildlife, appearing in sections 17.40 to 17.48, provides otherwise. Under 50 CFR 17.72 with regard to threatened plants, a permit may be issued for the following purposes: for scientific purposes, to enhance propagation or survival, for economic hardship, for botanical or horticultural exhibition, for educational purposes, or for other purposes consistent with the purposes and policy of the Act. Additional statutory exemptions from the prohibitions are found in sections 9 and 10 of the Act.

We recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist us in implementing all aspects of the Act. In this regard, section 6 of the Act provides that we shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is

operating a conservation program pursuant to the terms of a cooperative agreement with us in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, will be able to conduct activities designed to conserve the whitebark pine that may result in otherwise prohibited activities without additional authorization.

For the reasons discussed above, we find that this rule under section 4(d) of the Act is necessary and advisable to provide for the conservation of the whitebark pine. This final 4(d) rule enhances the conservation of whitebark pine by prohibiting activities that would be detrimental to the species, while allowing the forest-management, restoration, and research-related activities that are necessary to conserve whitebark pine; these forest-management, restoration, and research-related activities maintain and restore forest health on the Federal lands that encompass the vast majority of the species' habitat within the United States. Moreover, this 4(d) rule will allow activities that do not present a threat to the species to continue; specifically, it will allow Tribes to continue collecting this culturally important species for traditional or ceremonial purposes.

However, notwithstanding the provisions in this 4(d) rule, Federal agencies must comply with relevant section 7 consultation requirements for all Federal actions, including any forest-management, restoration, or research-related activities, that may affect whitebark pine, including activities that may affect individual trees or populations. Nothing in this 4(d) rule will change in any way the recovery-planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of whitebark pine. However, interagency cooperation may be further streamlined through planned programmatic consultations or other tools for the species between Federal agencies and the Service.

III. Critical Habitat

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances:

(i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States;

(iv) No areas meet the definition of critical habitat; or

(v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available.

In this final rule, we affirm the determinations we made in our December 2, 2020, proposed rule (85 FR 77408) concerning the prudency and determinability of critical habitat for the whitebark pine. Habitat is not a limiting factor for this species, and there are no significant habitat-based threats that are now or would in the future limit habitat for the whitebark pine. In light of the particular circumstances of the whitebark pine, we have determined that designation of critical habitat is not prudent. We reach this conclusion largely because of the nature of the threats for this species—the main driver of

the species' status is disease (white pine blister rust). Designation of critical habitat would not provide any additional protective measures or benefits that address this specific threat. In fact, designation of critical habitat could create an additional regulatory burden that could detract from efforts to propagate rust-resistant trees or to apply other management prescriptions to address the fungal disease. Nor would designation of critical habitat provide otherwise unavailable information to guide conservation efforts for the species. Therefore, a designation of critical habitat would not be advantageous for the species. For more information on the rationale for our determination that designation of critical habitat is not prudent, see the December 2, 2020, proposed rule (85 FR 77408).

We note that because the present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the whitebark pine, designation of critical habitat would not be beneficial to the species. Therefore, we would also conclude that designation of critical habitat is not prudent for the whitebark pine under the regulations in effect prior to those published on August 27, 2019 (84 FR 45020).

Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.*)*

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 et seq.), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments),

and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We solicited information from Tribes within the range of whitebark pine to inform the development of our SSA and notified Tribes of the proposed listing determination. We also provided these Tribes the opportunity to review a draft of the SSA report and provide input prior to making our proposed determination on the status of the whitebark pine. We received comments from two Tribes, the Nez Perce Tribe and the Confederated Salish and Kootenai Tribes, on the December 2, 2020, proposed rule (85 FR 77408). We continued to coordinate with Tribes throughout the development of this final determination to ensure we understood and addressed their comments on the proposed rule. Thus, we have fulfilled our relevant responsibilities.

References Cited

A complete list of references cited in this rulemaking is available on the internet at *https://www.regulations.gov* and upon request from the Wyoming Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Wyoming Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245, unless otherwise noted.

2. Amend § 17.12, in paragraph (h), by adding an entry to the List of Endangered and Threatened Wildlife for "*Pinus albicaulis*" in alphabetical order under CONIFERS to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
* * * * * * *				
CONIFERS				
* * * * * * *				
Pinus albicaulis	Whitebark pine	Wherever found	T	87 FR [Insert *Federal Register* page where the document begins], [Insert date of publication in the *Federal Register*]; 50 CFR 17.74(a).[4d]
* * * * * * *				

3. Add § 17.74 to read as follows:

§ 17.74 Special rules - conifers and cycads.

(a) Whitebark pine (*Pinus albicaulis*).

(1) *Prohibitions*. The following prohibitions that apply to endangered plants also apply to whitebark pine, except as provided under paragraph (a)(2) of this section:

(i) Import or export, as set forth at § 17.61(b) for endangered plants.

(ii) Remove and reduce to possession from areas under Federal jurisdiction, as set forth at § 17.61(c)(1) for endangered plants.

(iii) Maliciously damage or destroy the species on any areas under Federal jurisdiction, or remove, cut, dig up, or damage or destroy the species on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law, as set forth at section 9(a)(2)(B) of the Act.

(iv) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.61(d) for endangered plants.

(v) Sell or offer for sale, as set forth at § 17.61(e) for endangered plants.

(2) *Exceptions from prohibitions.* In regard to the whitebark pine, you may:

(i) Conduct activities as authorized by permit under § 17.72.

(ii) Conduct forest-management, restoration, or research-related activities conducted or authorized by the Federal agency with jurisdiction over the land where the activities occur.

(iii) Remove and reduce to possession from areas under Federal jurisdiction, as set forth at § 17.71(b).

(iv) Collect whitebark pine seeds from areas under Federal jurisdiction for Tribal ceremonial use or traditional Tribal consumption, provided that:

(A) The collection is conducted by members of federally recognized Tribes; and

(B) The collection does not violate any other applicable laws and regulations.

(b) [Reserved]

Martha Williams,
Director,
U.S. Fish and Wildlife Service.

[FR Doc. 2022-27087 Filed: 12/14/2022 8:45 am; Publication Date: 12/15/2022]